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APPROACH ON PHYSICAL ACTIVITY AMONG SPOUSES OF EXPATRIATES IN MALAYSIA

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ABSTRACT

Women are prone to body weight gain and chronic obesity-related diseases as they transition from early adulthood (20s) to midlife (30s and 40s) and mature adulthood (50+). In this study we investigate the perspectives of expatriate spouses, primarily stay-at-home wives, towards physical activity in Malaysia. An interpretive description qualitative study was conducted on 40 women, age between 20-50 years (Arab and south Asian ethnicity) residing in Gombak, Petaling Jaya and Cyberjaya township of Selangor, Malaysia. The interviews were conducted in the first half of 2019, and were done on a one-to-one basis. A qualitative thematic analysis approach was used for data analysis. The primary findings showed that conformity to cultural reservations stemming from gender and family roles and practices in the home countries is a strong determinant of the collective attitude towards physical activity. Participants also lacked a general consciousness of healthy lifestyle, which also affected their knowledge or curiosity about available resources in their local Malaysian neighbourhoods (which are relatively more and accessible compared to that in their home countries). It was also noted that individuals who have been living longer periods (>10 years) abroad were more accustomed and familiar with healthy physical activity practices. It appeared from participants' expectations that arrangements of community-based campaigns and promotional events such as organized and directed gym sessions conducted in the participant's language of choice may be attractive to many.

Keyword: Physical Activity, Expatriate, Community-based Research, Middle-life, Women

INTRODUCTION

Physical activity (PA) has been positively associated with prevention of at least 35 major non-communicable and chronic diseases, including, physical conditions such as type II diabetes, coronary heart disease, nonalcoholic fatty liver disease, osteoarthritis, stroke, breast cancer, colon cancer and mental conditions such as cognitive dysfunction, hypertension and depression and anxiety (Booth, Roberts, & Laye, 2012). The WHO recommends at least 150 min of moderate intensity or 75 min of vigorous intensity physical activity per week, or an equivalent combination of these (WHO, 2010). Data obtained from the Global Health Observatory show the prevalence of insufficient PA among females to be 18.3%, 30.1% and 41.6% belonging to low-income, middle-income and high-income groups respectively (WHO,

2016). The numbers are noticeably lower for men at 13.4%, 21.9% and 32.0 % for each income groups respectively. The disparity in prevalence of PA among different income groups specifically for the Asian population have been previously investigated and attributed primarily to urbanization and the associated lifestyles (Day, Alfonzo, Chen, Guo, & Lee, 2013). Muntner et al. (2005) have reported 78.1% and 21.8% of residents (35 to 74 years age) to be physically active in rural and urban China respectively. A similar trend has also been observed in Punjab, India (Tripathy et al., 2016), where rural females (19.1%) reported to have been engaged in more vigorous PA compared to urban females (6.3%). In this particular study, the reported PA for the males was comparable in rural and urban participants. Al-Nozha et. al. (2007) also reported comparable levels of PA between rural and urban population in Saudi Arabia, however, the actual figure of physically active participants was below 10%. In Malaysia, 64.3% adults above 16 years age was reported to be physically active, about 10% less than the global figure of 72.5%, with comparable trends in rural and urban areas (Teh et al., 2014; Ying et al., 2014).

With a statistics of more than 36 million annual deaths from noncommunicable diseases, The World Health Organization's (WHO) Global Action Plan for the Prevention and Control of NCDs 2013-2020 aims to reduce physical inactivity by 10% by 2025 (WHO, 2013). Guthold, Stevens, Riley and Bull (2018) investigated the worldwide trends in PA from 2001 through 2016 across 1.9 million participants in 168 countries and found little and sluggish progress in the levels of PA all over, with increasing levels of inactivity in high-income countries. As of 2018, Malaysia is close to reaching the high-income status in a couple of years (circa 2025). In recent decades, the country has also seen a high influx of expatriates owing to rapid expansion in industry and infrastructural developments. Considering Malaysia's economic trends, and the data indicating relatively lower levels of PA among females, it becomes imperative to investigate the status and perspectives of expatriate spouses in Malaysia (majority of whom are middle-aged females and stay-at-home wives with limited mobility) towards PA for health. In this paper, we present a qualitative study examining the perspectives and barriers faced by the said community. The outcome is expected to help policy makers and communities to organize and design accessible PA practice.

METHODOLOGY

Qualitative style of research was chosen because there will be more detailed data for thematic analysis. It is also suitable for the researcher to extract a deeper answer from the participants and develop complete description of a social phenomenon. Purposive sampling was opted in this research in selecting the sample for the participants (n=40). The researchers reached out in Cohort WhatsApp group to find participants and whoever was interested in the topic could just reach back and set the date and time according to their availability. Participants were aged between 20-50 years (Arab and Asian ethnicity) residing in Gombak, Petaling Jaya and Cyberjaya township of Selangor. Once the participants have agreed, they were given a brief introduction on the topic and objective of the study. Before the interview, participants were given a set of questions to prepare their answers. Once the participant and researcher met, they discussed on the questionnaires and interviews were

conducted for 15-20 minutes on one-to-one basis. Participants were informed of the opportunity to reach back later if they had further questions or needed clarifications.

The research opted for interview method, hence a voice recorder, pen, paper with set of questions and a laptop was used during the descriptive interview.

Ethical Considerations

Oral informed consent was taken for each participant after explaining the study objectives, procedures and data analysis methods in a common language.

RESULT

Characteristics of Participants

Participants (n=40) were interviewed during the first half of 2019 from January to June, age 20-50 years, female. The participants are spouses of expatriate in Malaysia under dependent visas. All the participants were university graduates, with some having postgraduate degrees. 80% (n=32) of them had children who were either infant or attending an educational institution (pre-school, primary, secondary or tertiary).

Among the recorded data, we asked about the body mass index (BMI) to which most of them gave accurate numbers and few were confused with the concept. Body mass index under 18.5 are considered to be underweight. 60% (n=24) were in the normal range (BMI 18.5 -24.9), 30% (n=12) were in the overweight range (BMI 25.0-29.9) and 10% (n=4) fell in the obese range (BMI 30+). Majority of them are full time housewives, few of them work online via freelancing.

More than half of the participants have been staying in Malaysia for between 3-5 years. Seven of them are in Malaysia for 2 years or less. Four of them have been here for almost 10 years, and six of them have settled for more than 10 years.

Perception on Physical Activity or Exercise

The participants unanimously asserted the importance of a healthy lifestyle and personal fitness. However, most were not familiar with structured fitness regimens. From the descriptive interviews, 62.5% (n=25) participants stated that they try to do physical exercise either in house or outdoor park or fitness centre, 17.5% (n=7) of them are irregular and the rest are involved in PA at all, as presented in Figure 1. Interpretation of the 25 women being active means walking, running, cycling, swimming or going to the nearby indoor gyms. One of the participants, who have been living for about a year in Malaysia, said,

"The days I attend the gym, I usually feel happy and uplifted. Whenever there is a gap, I start to feel a little gloomy. So I look forward to attending the gym regularly."

Participants with smaller children are able to have time-outs in parks where they may take small walks with other mothers. Some participants have mentioned about prioritizing healthy

diets, while highlighting certain barriers that deter their interests in regular participation in PA. These barriers will be discussed briefly in the following sections.

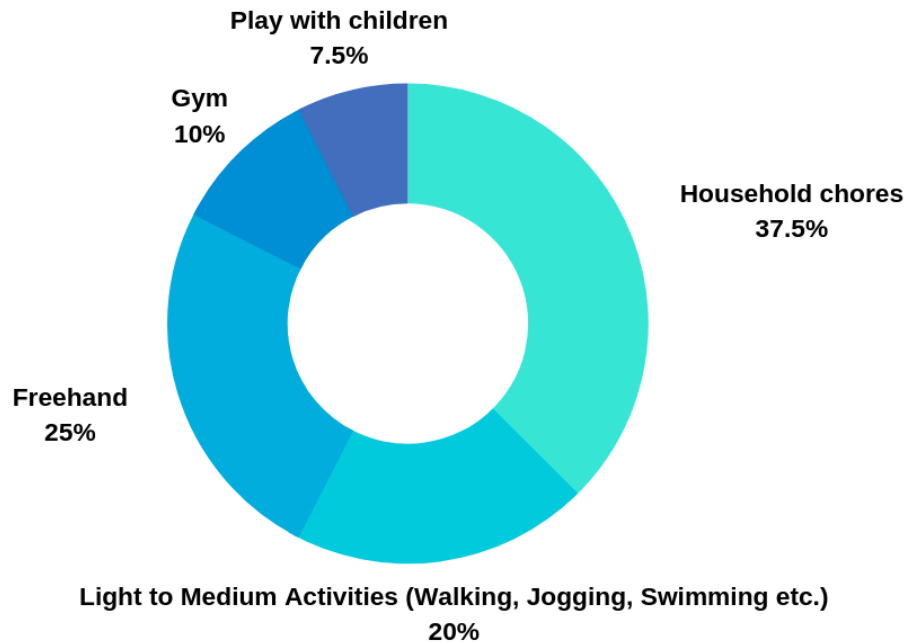


Figure 1. Types of physical activities self-reported by participants

Barriers to Physical Activity or Exercise

From the descriptive interview of our participants we have obtained five broad themes or active factors which act as barriers to regular physical activity: lack of motivation, religious and cultural backgrounds, financial barriers, biophysical limitations and lifestyle.

1. Lack of Motivation

The most common deterrent for expatriate housewives is the lack of motivation to be active in physical exercises. Sometimes they get too comfortable at home which prevents them from putting effort in doing any regular exercise. As one of the participants said,

"(I) feel lazy at home, don't feel like going outside for any kind of physical activity."

Moreover, since the participants are staying in Malaysia depending on their husband, they indicated that performing any PA would be much easier if the husband provides support and inspiration. Mental support from the husband plays an important role in being active for many of the women. One of the newly married participants expressed,

"Feel demotivated about going to the gym since my husband does not support the idea that much"

The amount of workload at home sometimes consumes much time and energy. However, some of the participants pointed out that they consider the household chores a kind of PA and believe it keeps them healthy.

"My household chores involve running here and there; cleaning so (it) helps me being physically active and prevent gaining weight as well."

Some participants, however, lacked basic knowledge or awareness about the facilities or exercise routines required for maintaining healthy PA. As one participant, herself not being very active has noted,

"Social awareness is not enough. Not necessarily one has to go to the gym. There are numerous free-of-cost physical activity options, but people do not even take that. So there is an issue with personal motivation."

2. Religious and Cultural Backgrounds

In Malaysia, gymnasiums and fitness centres are generally combined for male and female use simultaneously. This is one of the rising concerns among the participants. From religious point of view the typical attire for vigorous exercises or light exercises like yoga do not adhere to Muslim religious code, such as, too much body fitting and revealing which many are uncomfortable to wear.

"As Muslim women we need to cover our aurah and it can be difficult to attend gym classes where there are no special facilities for Muslim women."

"Nope, because of the hijab matter and it's (the gym area) not segregated so I don't use it"

Much of the participants came from backgrounds with strict cultural and religious practices which are often incompatible with the modern urban environment. The participants rather have stronger motivation to maintain and preserve the norms even though they are living in a relatively multicultural society such as Malaysia's. On a different note, a 25 year old who have started going to the gym recently was concerned that she may have fallen out of practice for not being able to participate in regular PA back home despite strong personal interests,

"During teenage, my parents were very conservative. 'It may make you look masculine.' they feared. Being active in sports was considered a masculine quality back at home. Although I was in an all girl's school, there was little encouragement from home to participate in school events. My family encouraged food control, rather than physical activity, when it came to health concerns."

In relatively conservative societies such as Bangladesh or India, certain activities become gender specific for adolescents. This includes sports and athletics, which are dominated by males, whereas girls are more involved in activities such as arts and culture. Such a distinction often dilutes the importance of basic PA such as jogging or light sports, eventually making women distant from such activities. Family-friendly gymnasiums or fitness centres are still very costly and difficult to access in many Asian neighbourhoods making it a luxury service for many. These views are expressed by few participants where they considered certain gym activities as male-only.

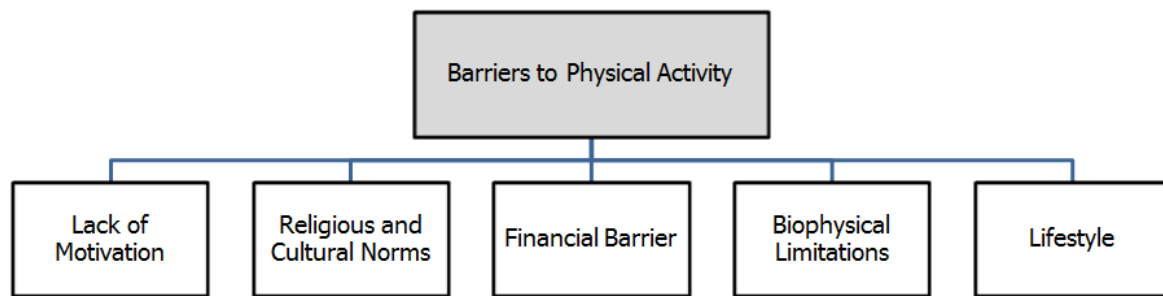


Figure 2. Barriers to physical activities cited by participants

3. Financial Barriers

Regular physical exercise for health can be performed in residential amenities or nearby parks or playground. But PA in a regular manner with necessary equipment is more convenient in gyms or fitness centre. We asked about the membership cost of gym or fitness centres and the responses showed prevalence of some financial difficulty. Recorded from the participants,

"Branded gyms are expensive. Sometimes fitness becomes a luxury."

"If the cost of the fitness centre is out of my affordability, I will think twice before joining the gym as well as routine physical exercise."

"It's quite expensive from an advertisement I saw in FB."

"It's expensive. The membership cost is too extreme. There is one in the shopping mall near me where subscription can go up to RM400 per month. It comes down to priority if you want to go to the gym."

From the responses it also appeared that some did not know the actual cost of gym or fitness centre in Malaysia because of lack of interest or outright considering it as costly. On the other hand, some who have experience pointed out the cost is too extreme for them. There were also limited responses which noted the membership fees to be affordable. The location of fitness centres also adds to the financial considerations as renowned centres only have branches in certain townships as Kuala Lumpur, Damansara and Petaling Jaya. Nevertheless, staying abroad creates a budget constraint in many families (especially in the sample of our study which were predominantly single-income households), so if the cost is not reasonable to them they will hesitate going to gym or fitness centre.

4. Biophysical Limitations

Women's health issue is much more sensitive compared to men's. Women have biophysical limitations compared to men in accomplishing the same task. For instance, women's menstrual cycle every month changes the flow of everyday work, affecting time management. Sometimes cramps or other complications occur where it becomes difficult to

even maintain regular tasks. Moreover, effects are different for different women or for the same individual at different times. One of the participants expressed her concern,

"Things are difficult for women. Things like pregnancy make regular habits difficult. Women also need to be careful for many other health reasons."

Another participant added,

"After my first child birth, my body changed and gained weight which makes it harder for me to perform any medium to heavy physical activity now."

New mothers face difficulties with settling after giving birth abroad because of a lack of extra helping hands. The first few months make their life schedules hectic to cope with any other work except attending the infant and have less time to perform any kind of exercise in subsequent months.

"I went through this surgery where the consequence is back pain and feel weak when I do physical work."

So this is a crucial but unavoidable issue which is acting as strong barrier for women to get active in PA.

5. Lifestyle

Interpretation from the responses shows another barrier in being active in physical exercise is the increasing sedentary lifestyle of women. Sedentary lifestyle indicates a routine that includes little or no movements for daily tasks. A participant shared,

"When I have free time I watch TV or movies in Netflix. On weekends, or after work, the usual past-time with my husband is watching dramas and movies on the internet."

"Don't have much time after finishing household chores, just relax and watch TV in the evening"

"Don't feel like going out or do any physical activity after finishing my daily chores at home."

For relaxation and entertainment, some of the participants choose to rest and watch TV or Netflix, which some of them are very much addicted to watch every day at a fixed time.

DISCUSSION

Participants have cited lack of motivation/knowledge, religious/cultural reservations, financial difficulties, biophysical limitations and lifestyle as the main factors affecting regular PA. Responses about financial barriers (costs of travelling to and maintaining a gymnasium membership) have varied among participants depending on household income, while also revealing that participants regular in PA were mostly not members of any commercial fitness centre. Several participants have indicated that the facilities available in local neighbourhoods were sufficient for basic PA.

Women's biophysical limitations naturally came into discussion, while many participants revealed a fear of physical harm if they were active in PA, such as affecting pregnancy or conception. Some participants were already suffering from certain chronic conditions such as back pain, or other medical restrictions on heavy movement. Participants in this category emphasized on efforts to maintaining a healthy diet to offset for PA.

Johnson (2000) notes the primary reasons for physical inactivity for Asian women include a preference against places that has mixed-gender gathering, or places where "people show parts of their bodies". However, the main concern for women was going out alone. Children of South Asian ethnicity reported low levels of PA in a study conducted by Smith et al., (2018) in England. Parents of these children prioritized studies over PA, hence limiting time available for active play. The over emphasis on academic studies is indeed a cultural baggage carried by many Asian children owing to the high level of competition in their native societies. Those who are actively involved in sports are usually involved in competitive and professional games. The parents also admitted of failing to act as good role models, affecting the motivation of their children. As suggested by Moore et al. (1991), children of active parents are 5.8 times more likely to be active compared to that when both parents are inactive. The factor of religious sensitivity and preferences has been highlighted in the studies of Maesam-T-AbdulRazak, Sofian, Omar-Fauzee, and Abd-Latif (2010) and Kalani, Pourmovahed, Farajkhoda, and Bagheri (2018) on Muslim communities with Arabic and Iranian background respectively. In both these studies, participants feared the violation of cultural norms and religious codes, where the primary concern from cultural perspective was a 'degradation of respectable femininity', and the religious concern was that with mixed-gender environments. Majority of participants in the current study come from similar backgrounds, and have mentioned similar experiences and reservations. Through long detachment from organized PA or regular leisurely sports, they have become unaccustomed to healthy PA. Although there are abundant family-friendly PA facilities in Malaysia, the expatriate wives with South Asian and Arabic ethnicities find it difficult to adopt and maintain a suitable PA routine.

One of the growing concerns in present times has been the explosion of leisurely recreational options, which primarily involves digital and social media viewing. Services such as Netflix, Amazon Prime, and iflix have increased in subscription by 4.5 times between 2007 and 2017 in the US, and now more than 50% of US household is subscribed to at least one paid video streaming services (Deloitte, 2018). The report from Deloitte (2018) also notes an increase in TV viewing times from 15h/wk to 23h/wk in the same period 2007-2017. (Nielsen, 2018) reports as of Q1 2018, adults spending about 11h/day connected to digital media that includes social networking, video streaming and web browsing, a 30m increase compared to Q3 2017. Studies by Sugiyama, Healy, Dunstan, Salmon, and Owen (2008) has found a moderate negative correlation between TV viewing times and leisure-time physical activities specifically among women, and identified TV viewing times itself as a stronger marker for sedentary lifestyle. However, Vandelanotte, Sugiyama, Gardiner, and Owen (2009) notes that leisure-time physical activities were largely independent of computer and

internet use, although duration of computer use had a strong correlation with obesity for highly active adults. While considering overall sedentary leisure time spent by Australian adults (TV viewing usually constitutes half of it), which is 4h on a weekday and 5h on a weekend for both men and women, Burton, Khan, Brown, & Turrell (2012) also did not find significant correlations between sedentary leisure time and PA.

The primary factors affecting or deterring regular PA practices among spouses of expatriates seem to be a lack of motivation and difficulty in time management. Attempts have been made by some participants to form small groups in local neighbourhoods for morning walks, suggesting the possibility of active PA if continuous encouragement and motivation is available. One of the models that can help to explain this phenomenon is the *Health Belief Model* (Rosenstock, 1974). The practice of a health behaviour, in current study: physical activities, depends on whether an individual perceives a particular health threat, and whether they believe a certain health practice would be able to reduce it. Brewer et al. (2007) identifies three dimensions of perceived risk: perceived likelihood, perceived susceptibility and perceived severity. In our current study, although the participants were aware of the general benefits of PA, they were quite unfamiliar with the health risks (immediate and long-term) associated with long detachment from PA. For many, the neighbourhoods were relatively new and there were cultural differences impeding integration with the community. Spouses of expatriates, especially from an Asian background, primarily sought new friends and acquaintances with similar cultural or religious identities limiting their exposure to active PA lifestyles (such as simply visiting the local gym alone and exploring its facilities). Hence, despite the abundance of PA facilities that may accommodate cultural and religious reservations, there remains little progress in adoption of regular PA.

Consistent spousal motivation and inspiration, and prioritizing PA as a family activity is also helpful in this regard. Surveys may be conducted by management bodies of residential community to identify specific times preferred by stay-at-home female residents. Time slots can be blocked for a few hours on particular days or time of the day providing exclusive access to female residents. Simultaneous and adjacent PA arrangements for children can also serve as motivating factors for many mothers. As one of the participants has noted, the general public awareness pertaining to the health risks of physical inactivity needs more visibility, similar to the likes of anti-smoking campaigns,

"People are aware about the harms of smoking because it is so heavily publicized, but not so much about obesity."

STUDY LIMITATIONS

The participants in this study were mainly from Asian and Arabic backgrounds. The views expressed is influenced by their cultural and religious identities (which have many shared values) The research findings may be representative of the population with said ethnicities,

but may not represent all expatriate spouses in Malaysia which includes European and American ethnicities.

CONCLUSION

In this study, we identified the general approach and prime factors affecting PA among spouses of expatriates in Malaysia. The participants agree to the importance of PA, but have different views on what may constitute healthy PA. A majority has identified household chores as a mode of PA, and consider it sufficient. For those who acknowledged the effectiveness of outdoor PA, have cited some barriers. The most common deterrent was the lack of motivation and religious/cultural reservations with the current setting. Although Malaysian environment provides ample muslim-friendly facilities besides fitness centres, such as the many '*taman tasik*' in different neighbourhoods, numerous Muslim participants have shown a lack of knowledge on how to effectively access those. Many new townships, such as Cyberjaya and Sunway, have started offering healthy lifestyle activities comprising of Zumba, salsa and yoga, but the arrangements are still not considered as friendly for mothers with small children.

Lack of motivation or consciousness was clearly noticed during most interviews. Intervention strategies and public relation campaigns, especially in native languages, to promote PA must be considered a priority for concerned authorities. A suggested pathway can be through campaigns organized and coordinated by the large pool of international students currently residing in Malaysia.

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ASSOCIATION BETWEEN EMERGENCY CAESAREAN SECTION, EARLIER ORDER OF BIRTH, HIGH PARENTAL AGE GAP AND AUTISM SPECTRUM DISORDER AMONG MALAYSIAN CHILDREN: A CASE-CONTROL STUDY

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ABSTRACT

A rise in the prevalence of autism spectrum disorders in the last decades led recent research to focus on the diagnosis comparing environmental and genetic factors. This paper sought for possible factors that put children at risk for ASD. We investigated the association of ASD with the following independent factors: parental ages, parental age gaps, and birth order and birth delivery method among the Malaysian population. We recruited 929 children from primary national schools enrolled during the academic year 2017-2018 that with 465 cases and 464 controls. Questionnaires were distributed to the parents of these children and data analysed using SPSS version 20. Significant associations were found on three variables: mode of delivery ($p < 0.01$), birth order ($p < 0.001$) and parental age gap ($p < 0.05$). Emergency Caesarean section (OR = 1.55, 95% CI [1.13, 2.26]), earlier order of birth in the family (OR = 1.45, 95% CI [1.28-1.61]) and increasing gap in parental ages (OR = 1.04, 95% CI [1.001, 1.07]) were positively associated with ASD. This study concludes that emergency Caesarean section, earlier order of birth in the family and increasing gap in parental age are independent risk factors in the development of autism among primary school children in Malaysia. (200words max)

Keywords: Autism spectrum disorder; Malaysia; parental age; birth delivery; birth order; parental age gap

INTRODUCTION

In Malaysia, the epidemiological data on children with ASD is lacking as the national registry categorises ASD along with other learning disability and the data for autism independently could not be obtained. (Ting, Neik, & Lee, 2014) The only data available is from a feasibility study conducted among children between 18 to 36 months of age in child health clinics by Ministry of Health Malaysia using the Modified Checklist for Autism in Toddlers (M-CHAT).

According to this study, the prevalence of ASD in Malaysia was approximately 1.6 in 1000, which translates to 1 in 625 children having ASD.(MOH, 2014)

The aetiology of ASD has been a topic of discussion for many years and unfortunately, is still unclear to this day. This has been one of the reasons why the management of ASD is challenging to the team attending to the children. The cause of ASD is multifactorial, although, the exact cause(s) is/are yet to be identified. Recent research shows promising results from the following risk factors: obstetric mode of delivery, birth order, parental age and parental age gap

LITERATURE REVIEW

1. Obstetric Mode of Delivery

The obstetric mode of delivery has a significant impact in both early and late outcomes in a child's life. Although the causal relationship between the type of obstetric delivery and ASD is not established there is some evidence that links certain obstetric modes of delivery to the development of ASD in children. Caesarean section is stipulated to increase the risk of ASD. (Curran et al., 2016) (Gregory, Anthopolos, Osgood, Grotegut, & Miranda, 2013) (Curran et al., 2015) A systematic review and meta-analysis of thirteen studies on birth by Caesarean section and development of ASD and attention-deficit/hyperactivity disorder stated that Caesarean section is associated with a modest increased odds of ASD when compared to vaginal delivery with a pooled OR of 1.23 (95% CI: 1.07, 1.40).(Curran et al., 2015)

2. Birth Order

The relationship between birth order / parity and ASD has vastly been discussed with associations since early 1980s.(Tsai & Stewart, 1983)A 1983 study by Tsai et al investigating the independent variables of maternal age and parity with ASD risk showed a significant relationship between the risk of developing autism and parity, more specifically the risk being higher in firstborn in smaller sibship and fourth-or-later born in larger sibship. A meta-analysis of 40 studies investigating over 50 prenatal factors was conducted in 2009. A significant relationship between birth order/parity and risk of autism was indicated by nine studies, of which six indicated a mixed trend. (Gardener, Spiegelman, & Buka, 2009) where autism was associated with being first or later born (\geq third), often depending on the size of the sibship.(Gardener et al., 2009)The meta-analysis found a statistically significant 61% increase in risk for first-born children compared with children born third or later. The relationship between birth order and autism risk was not found to be linear.(Gardener et al., 2009)

3. Parental age; paternal age and maternal age.

A family-based study and a meta-analysis provided a strong evidence that advancing paternal age at the time of birth of offspring increases the risk of autism and this statement is supported by multiple studies.(Hultman, Sandin, Levine, Lichtenstein, & Reichenberg, 2011)(Reichenberg et al., 2006)(Idring et al., 2014)(Durkin et al., 2008) (Wu et al.,

2017):(Sandin et al., 2016) The risk of ASD is independently associated with advancing paternal age with some studies showing a linear relationship.(Reichenberg et al., 2006):(Idring et al., 2014) A 2017 meta-analysis revealed a 55% increased risk of ASD with increased paternal age while another historical population-based cohort study exhibited a 5.75 times increase in ASD risk in offspring of men 40 years or older after controlling for year of birth, socioeconomic status and maternal age.(Reichenberg et al., 2006):(Wu et al., 2017)

High maternal age was found to be positively and independently associated with the risk of developing ASD.(Reichenberg et al., 2006):(Larsson et al., 2005) There is a 41% increase in ASD risk with advancing maternal age, however, the association between the mother's age and chances of producing an offspring with ASD is found to be non-linear.(Idring et al., 2014):(Wu et al., 2017) A large study involving 417,303 Swedish children born between 1984 and 2003 with 4,746 ASD cases, revealed that the increased ASD risk in advancing paternal age was evident only in mothers aged 35 years and below, meanwhile, advancing maternal age increased risk of offspring ASD regardless of paternal age.(Idring et al., 2014)

4. Parental age gap

A 2016 cohort study by Sandin S and colleagues involving Denmark, Norway, Israel, Sweden and Western Australia revealed an association between autism risk and increasing difference in age between the parents.(Sandin et al., 2016) The study not only provided a strong evidence supporting the relationship between advanced parental ages at time of birth and autism risk in the offspring, but also provided evidence of combined parental age effect where the risk was found to be high among disparately aged parents.(Sandin et al., 2016) The study analyses revealed that moderate-to-large (10 years or more) difference between the parental ages resulted in an increased risk, indicating the need for further studies to explore the underlying mechanism for this finding.(Sandin et al., 2016)

OBJECTIVE

The preceding discussion on risk factors are worth to be explored further thus was taken into account collectively to be investigated among the Malaysian population. The objective of this research is to determine the association of autism and the four independent variables: obstetric mode of delivery, birth order, parental age and parental age gap among Malaysian children studying in National Schools of West Malaysia.

METHODOLOGY

This is a case control study, conducted in West Malaysia to determine the association of autism and the four risk factors: mode of delivery, birth order, parental age and parental age gap. In Malaysia, presently there is a need for comprehensive statistical data about autism. The only available resource for autism cases are the therapy centers and schools. Additionally, the database of the Department of Social Welfare and Development categorizes autism under the big umbrella of "Learning Difficulties." whereby the autism cases are mixed with other disabilities such as: Down's Syndrome, Late global Development, Attention Deficit

Hyperactivity Disorder, Dyslexia, Dyscalculia and Dysgraphia. Hence, we selected cases from the primary government schools all over West Malaysia offering programs for the children known to have autism; namely Special Education Schools and National Schools with Inclusive Education Program known as Program Pendidikan Khas Integrasi (PPKI). PPKI is an inclusive education program for school children with disabilities introduced by the Ministry of Education in 1962.(Ministry of Education, 2018) It is a separate class of disabled individuals organized under mainstream schools in both primary (Rendah) and secondary (Menengah) with integrated setting so they can interact and play with other children of their age. Admission to this program requires a proper medical diagnosis. Students are required to be thoroughly evaluated and certified by medical specialist before they can enjoy the full services of the said facility. (Pendidikan, 2013). Current clinical practice guidelines state that the diagnosis of autism is made either by using criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR 2000 and DSM-5 2013) or the 10th-Revision of International Classification of Diseases (ICD-10). (MOH, 2014) At present, there are about 1,973 Primary and Secondary National schools with PPKI (Table 1) programs all over West Malaysia. While Special Education Schools are schools built specifically for children with disabilities in both primary (Sekolah Kebangsaan Pendidikan Khas) and secondary (Sekolah Menengah Pendidikan Khas) levels. There are twenty eight Sekolah Kebangsaan Pendidikan Khas for primary school children and five Sekolah Menengah Pendidikan Khas for secondary school children all over West Malaysia.(National Early Childhood Intervention Council, 2014) Both the Special Education and Inclusive education program accomodates children with different types of disabilities like visual, hearing, speech and learning disabilities who are 'educable.' As described under regulation 3 of the Special Education Regulations, 'educable' is defined as to mean a child who is able to manage him/herself without help; and a panel consisting of a medical practitioner, an officer from the Ministry of Education and an officer from the Department of Welfare has confirmed that the child is capable of undergoing the national educational programme.(National Early Childhood Intervention Council, 2014) The source of cases for this research only included national schools offering programs for primary students from both PPKI and SKPK. The regular primary national schools served as sources of controls for this study. A total of 929 respondents from primary national schools in West Malaysia were included in this study with 464 controls and 465 cases.

Table 1: Total Number of National Schools offering Inclusive Special Education Program

No.	State	National Schools with Inclusive Education Program (<i>Sekolah Kebangsaan Program Pendidikan Khas Integrasi</i>)		
		Primary	Secondary	Total
1	Perlis	13	11	24
2	Kedah	112	75	187
3	Pulau Pinang	42	23	65
4	Perak	127	81	208
5	Kelantan	101	54	155
6	Terengganu	105	57	162
7	Pahang	148	70	218
8	Selangor	142	76	218
9	Kuala Lumpur	37	27	64
10	Melaka	104	40	144
11	Negeri Sembilan	81	54	135
12	Putrajaya	4	4	8
13	Johor	267	118	385
TOTAL		1385	588	1973

Source. Mohd Helmy bin Mahat, Ketua Unit, Unit Data dan Maklumat, Cawangan Perancangan dan Penilaian, Bahagian, Pendidikan Khas, Kementerian Pendidikan Malaysia

Questionnaire

To assess the association between ASD and the four factors, a questionnaire was designed and information was sought from parents of students attending the schools listed above. Permission to distribute the questionnaires was granted by the Educational Planning and Research Division of the Ministry of Education. The questionnaire comprised two parts: Part A contained questions covering the following: the ages and birth dates of the parents, family income, and the mode of birth delivery of the child enrolled. Part B focused on the information about the child with autism: birthdate, age, gender, the birth order in the family and the healthcare personnel who made the diagnosis of autism. The questionnaire was translated into the Malay language by a professor teaching language studies in a public university. A pilot test was carried out to ensure validity and reliability of the questionnaire. Parents of children attached to a non-government organization (NGO) therapy center were asked to participate in the pilot survey and comment if the instructions were clear, comprehensive and easy to understand. They were also asked if the confidentiality was appropriately maintained in the questionnaire. Suggestions were collected and integrated into the final questionnaire.

a) Cases

During the initial phase of data collection, principals of the different SKPKs were approached for the distribution of the questionnaires. The questionnaires were passed to the special education teachers of their schools who identified the students with medical diagnosis of

autism spectrum disorder as provided by parents in the medical certificates . However, we could not obtain adequate number of participants as some of these SKPKs were exclusively providing education to deaf and mute only. Due to the scarcity of the available enrollees (Table 2), regular government schools offering PPKI programs were also targeted (Table 3). During the later phase of data collection, the questionnaire was transformed into a google survey and the link was created. The link to the online survey was sent to the email addresses of the State education department (Jabatan Pendidikan Negeri - JPN) directors of the thirteen states. (Table 3) The researchers followed up through telephone calls to confirm receipt of the emails. Officers from the different (Jabatan Pendidikan Negeri) states were assigned by the state office to coordinate with the researchers. The states of Johor, Melaka, Perak, Terengganu, Kedah, and Kuala Lumpur allowed the link to be sent to the schools. The Jabatan Pendidikan Negeri (JPN) officers helped to circulate the questionnaire link to the school principals through emails. For the other states, the researchers approached some schools with high number of autism enrollees directly and the questionnaires were either sent through email, post or handed in person to the principals. Questionnaires were handed down to the special education teachers who then identified parents of those children with the diagnosis of Autism Spectrum Disorder from their database. We obtained a total number 465 primary students of different ages (6-12 years).

Table 2: Total number of autism enrollees in Primary Special Education Schools, (SKPK) West Malaysia 2017

No.	State	SKPK	Autism Enrollees
1	Johor	SKPK*	9
2	Kedah	SKPK Alor Setar; SKPK Sungai Petani	8
3	Kelantan	SKPK Kelantan	3
4	Pahang	SKPK Kuantan	1
5	Perak	SKPK Taiping SKPK Ipoh	4
6	Perlis	SKPK Perlis	5
7	Pulau Pinang	SKPK Jalan Hutton; SKPK Persekutuan	21
8	Terengganu	SKPK Besut SKPK Kuala Terengganu	2
Total			53

Source. **Fatimahtul Zaharah binti Ithnin**, Ketua Unit, Unit Data dan Maklumat, Cawangan Perancangan dan Penilaian, Bahagian, Pendidikan Khas, Kementerian Pendidikan Malaysia.

*No information on the name of the SKPK

Table 2: Total number of autism enrollees in Primary National Schools with Inclusive Education Program, West Malaysia 2017

No.	State	Number of Schools (PPKI) with autism enrollees	Autism Enrollees
1	Johor ¹	266	590
2	Kedah ²	76	259
3	Kelantan ³	52	160
4	Melaka ⁴	59	214
5	Negeri Sembilan ⁵	51	154
6	Pahang ⁶	148	230
7	Perak ⁷	107	498
8	Perlis ⁸	9	23
9	Pulau pinang ⁹	42	1037
10	Selangor ¹⁰	122	1109
11	Terengganu ¹¹	52	101
12	Wilayah Persekutuan KL ¹²	59	481
13	Wilayah Persekutuan Putrajaya	4	70
Total		1,047	4,926

Source. *Fatimahtul Zaharah binti Ithnin*, Ketua Unit, Unit Data dan Maklumat, Cawangan Perancangan dan Penilaian, Bahagian, Pendidikan Khas, Kementerian Pendidikan Malaysia. ¹Yahaya Ali, Jabatan Pendidikan Negeri Johor, ²Jabatan Pendidikan Negeri Kedah, ³Nawi Awang Senik, Jabatan Pendidikan Negeri Kelantan, ⁴Hj Mohd Nazri bin Hj Abdul Latip, Jabatan Pendidikan Negeri Melaka, ⁵Letchumy A/P Sinnan, Jabatan Pendidikan Negeri Sembilan, ⁶Encik Amir Jabatan Pendidikan Negeri Pahang, ⁷Fakhrul Nizam Pakhrudin, Jabatan Pendidikan Negeri Perak, ⁸Huzaimah binti Muain, Jabatan Pendidikan Negeri Perlis, ⁹Wan Shariza Binti Ahmad, Jabatan Pendidikan Pulau Pinang, ¹⁰Jabatan Pendidikan Negeri Selangor, Shafruddin Ali Hussin, ¹¹Jabatan Pendidikan Negeri Terengganu, ¹²Encik Mohamad Faizal bin Mohamad Roselee, Jabatan Pendidikan Kuala Lumpur

b) Controls

Controls were also selected from the same geographical location where most of the cases were identified. One to four primary government schools were identified from Penang, Perak, Kuala Lumpur and Selangor and questionnaires were personally passed to the principals who allowed distribution of the questionnaire to the parents of regular students of different ages (6-12 years). A total of 464 control were recruited.

RESULT

a) Sociodemographic characteristics of the cases

Data on sociodemographic factors of the 464 cases is shown in (Table 4). More than half of these children were male Malays with a family income of more than 3,000 Malaysian Ringgit (RM). Majority of the respondents were from Kuala Lumpur and Johor, though all states were represented as shown in the table below.

Table 3: Sociodemographic characteristics of Cases (N=465)

Variables	<i>N</i>	(%)
Age in years <i>Mean (SD)</i>	9.35	(1.7)
Race		
Malay	309	(66.5)
Chinese	126	(27.1)
Indian	25	(5.4)
Other	5	(1.1)
Gender		
Male	385	(82.8)
Female	80	(17.2)
Family Income		
≤RM 500	8	(1.7)
RM 501-2,999	175	(37.6)
≥RM 3,000	282	(60.6)
Place of residence		
Johor	106	(22.8)
Kedah	40	(8.6)
Perlis	3	(0.6)
Pulau Pinang	12	(2.6)
Putrajaya	4	(0.9)
Selangor	3	(0.6)
Kuala Lumpur	131	(28.2)
Negeri Sembilan	21	(4.5)
Pahang	58	(12.5)
Terangganu	23	(4.9)
Kelantan	1	(0.2)
Melaka	14	(3)
Perak	49	(10.5)

b) Differences between the cases and controls

Table 5 provides information on the cases and controls based on the variables assessed in this study. The two groups differed in terms of parental ages, child's birth order and birth delivery. Cases and controls differed in terms of age ($p < .05$); the mean age for mothers in the control group was 39.87 ($SD = 5.82$) and the mean age for mothers in the cases group was 38.95 ($SD = 5.52$). The mean age for fathers in the control group was 43.12 ($SD = 6.78$)

and the mean age for fathers in the cases group was 42.48 ($SD = 7.06$). As for the age gap, the mean age gap for controls was 3.72 ($SD = 3.74$) and cases was 4.14 ($SD = 4.37$).

Cases and controls also differed significantly in terms of child's birth order ($p < .001$). Amongst the controls, firstborns comprised 179 children which is 38.6% of the total while amongst cases, 255 of the respondents were firstborns which is 54.8% of the total. This shows a significantly higher number of firstborns in the cases groups compared to the control group. The cases group also exhibited a lower percentage of being the fourth or higher birth order compared to the control group with 7.7 % of respondents in the cases groups being fourth or higher birth order compared to 19.8 % in controls group.

The two groups differed significantly in terms of type birth delivery ($p = .01$). In the control group, a total of 353 children (76.1%) were born via normal spontaneous delivery (NSD), 70 children (15.1%) via emergency C-section, 26 children (5.6%) via elective C-section and 15 children (3.2%) via forceps/vacuum assisted delivery. In the cases group, a total of 296 children (63.7%) were born via normal spontaneous delivery (NSD), 105 children (22.6%) via emergency C-section, 38 children (8.2%) via elective C-section and 26 children (5.6%) via forceps/vacuum assisted delivery. A higher percentage of children were born via C-sections and forceps/vacuum assisted delivery among the cases group as compared to the control group.

c) Association between Autism Spectrum Disorder and the four variables

As seen in table 6, birth order negatively predicted the likelihood of being diagnosed with ASD, $OR = .68$, 95% CI [.59, .77]. The earlier the child was born in the family, the greater was the likelihood of being diagnosed with ASD, $OR = 1.45$, 95% CI [1.28-1.61]. Birth delivery method also significantly predicted the odds of being diagnosed with ASD. Specifically, in comparison to those born via NSD, the odds of being diagnosed with ASD increased by 1.55 for those born via emergency Caesarean section, $OR = 1.55$, 95% CI [1.09, 2.21]. The parental age gap and parents' ages do not show any significant association with the likelihood of ASD. However, the parental age gap was significant in the final logistic regression results for the ASD model when the mothers and fathers ages were not included. (Table 7).

Table 4: Differences between Cases and Controls

Variables	Whole Sample ($N = 929$)		Controls ($N = 464$)		Cases ($N = 465$)		t/χ^2
	n	(%)	n	(%)	n	(%)	
<hr/>							

Mother's age <i>Mean(SD)</i>	39.40	(5.69)	39.87	(5.82)	38.95	(5.52)	2.40	*
Father's age <i>Mean(SD)</i>	42.80	(6.93)	43.12	(6.78)	42.48	(7.06)	1.41	
Age gap <i>Mean(SD)</i>	3.93	(4.07)	3.72	(3.74)	4.14	(4.37)	-1.56	
Birth order							51.32	***
First	434	(46.7)	179	(38.6)	255	(54.8)		
Second	235	(25.3)	109	(23.5)	126	(27.1)		
Third	132	(14.2)	84	(18.1)	48	(10.3)		
Fourth	66	(7.1)	43	(9.3)	23	(4.9)		
Fifth through eighth	62	(6.7)	49	(10.5)	13	(2.8)		
Delivery							17.20	**
NSD	649	(69.9)	353	(76.1)	296	(63.7)		
Emergency C-section	175	(18.8)	70	(15.1)	105	(22.6)		
Elective C-section	64	(6.9)	26	(5.6)	38	(8.2)		
Forceps/vacuum	41	(4.4)	15	(3.2)	26	(5.6)		

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 6: Association between Parental Ages, Age gap, Birth Order, Birth Delivery Method and Autism Spectrum Disorders

Variables	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	Sig.	<i>OR</i>	95% CI for <i>OR</i>	
							Lower	Upper
Mother's age	.04	.04	1.20	1	.274	1.04	.97	1.12
Father's age	-.03	.04	.58	1	.448	.97	.91	1.04
Age gap	.06	.04	2.50	1	.114	1.06	.99	1.15
Birth order	-.39	.07	36.16	1	.000	.68	.59	.77
Birth delivery method			10.05	3	.018			
NSD vs. emergency c-section	.44	.18	5.99	1	.014	1.55	1.09	2.21
NSD vs. elective c-section	.46	.28	2.83	1	.093	1.59	.93	2.72
NSD vs. forceps/vacuum	.63	.34	3.37	1	.067	1.87	.96	3.65

Note. Overall model $\chi^2(7) = 67.57$, $p < .001$, Nagelkerke $R^2 = .094$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7: Association between Parental Age Gap, Birth Order, Birth Delivery Method and Autism Spectrum Disorder

Variables	<i>B</i>		<i>SE</i>	<i>OR</i>	95% CI for <i>OR</i>	
					Lower	Upper
Age gap	.03	*	.02	1.04	1.00	1.07
Birth order	-.37	***	.06	.69	.62	.78
Birth delivery method						
NSD vs. emergency c-section	.47	**	.18	1.60	1.13	2.26
NSD vs. elective c-section	.49		.27	1.63	.96	2.79
NSD vs. forceps/vacuum	.62		.34	1.85	.95	3.60

Note. Overall model $\chi^2(5) = 65.92, p < .001$, Nagelkerke $R^2 = .091$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

d) Association between Parental Age Gap, Birth Order, Birth Delivery Method and ASD

In the final logistic regression model (Table 7), parental age gap between the father and mother positively predicted the probability of being diagnosed with ASD, $OR = 1.04$, 95% CI [1.00, 1.07]. The larger the age gap, the greater was the probability of being diagnosed with ASD. Birth order negatively predicted the likelihood of being diagnosed with ASD, $OR = .69$, 95% CI [.62, .78]. The earlier the child was born in the family order, the greater was the likelihood of being diagnosed with ASD, $OR = 1.45$, 95% CI [1.28-1.61]. Birth delivery method also significantly predicted the odds of being diagnosed with ASD. Specifically, in comparison to those born via normal spontaneous delivery (NSD), the odds of being diagnosed with ASD increased by 1.60 for those born via emergency C-section, $OR = 1.55$, 95% CI [1.13, 2.26].

DISCUSSION

This is the first study on autism in West Malaysia which investigated all four main variables which are parental age, parental age gap, obstetric mode of delivery and birth order. Overall, the two groups differed in terms of parental age, obstetric mode of delivery and birth order with all these variables then further assessed for association with ASD. Strong association was identified between parental age gaps, birth order and birth delivery method with ASD.

a) Obstetric Mode of Delivery

We found that there was a significant association between the obstetric mode of delivery and ASD. The odds of ASD is predicted to be increased for children born via emergency Caesarean Section compared to those born via NSD. No association was shown between elective Caesarean section and ASD. This is similar to several other studies including a systematic review.(Curran et al., 2015) The review and meta-analysis on the development of ASD and Attention Deficit Hyperactivity Disorder (ADHD) in those born by Caesarean section, although

limited by the number of studies included, showed a 23% increased odds of ASD in children born via Caesarean section however unlike this research the authors did not investigate elective and emergency Caesarean section separately.(Curran et al., 2015). A 2012 review supports the previous statement, although, an association between Caesarean section and ASD is identified, the true effect of the mode of delivery and the underlying indications (such as failure to progress in labour, fetal distress, multiple pregnancies, breech presentation and the increasing trend of women requesting a Caesarean section) could not be separated from each other.(Guinchat et al., 2012) A 2009 study by Bilder and colleagues eliminated the association between primary Caesarean delivery and ASD when corrected for breech presentation (a known indication for Caesarean section), this is in agreement with the previous statement in which the risk of ASD is associated with the indication for Caesarean section and not the procedure itself .(Bilder et al., 2009)

Although there are several studies that support the correlation between Caesarean section and ASD, most of these studies have either grouped the mode of delivery into a singular Caesarean section variable or two different variables which are elective or emergency Caesarean section hence the presence of discrepancies as discussed above; none of these studies showed an association between emergency Caesarean section and ASD however there is an identifiable association between Emergency Caesarean section and elective Caesarean section with the risk of developing ASD. This classification of variables as such, is in turn, a limitation. Our study although have divided the said variable into two which is elective and emergency Caesarean section however, could have been improved by correcting to the common known indications of this procedure as done by Bilder et al. This could be taken into consideration by future studies.

b) Birth Order

In this study, the birth order of the child negatively predicted the likelihood of being diagnosed with ASD. Current existing literature provides a mixed result on the assessment of this variable. Some of the studies concur with the result of our study; the earlier the child was born in the family, the higher the ASD risk. However, the common agreeable conclusion among these studies is, ASD risk is higher in firstborn in smaller sibship and in fourth-or-later born in larger sibship.(Tsai & Stewart, 1983) (Gardener et al., 2009)(Bolton et al., 1997) The pattern of children diagnosed with ASD being either first-borns in smaller sibships or later-borns in larger sibships do propose a theory of parental anxiety of having another child after their current child developing autism hence, refusing to have any more children; a theory also known as the "stoppage rule".(Lord et al., 1991) (Gardener et al., 2009)(Bolton et al., 1997) In terms of limitations, our study could have been improved by investigating the risk of developing ASD not only in association with the birth order but in association with the birth order and the respective size of sibships.

c) Parental age; paternal age and maternal age

There are many studies highlighting the role of both paternal and maternal age in the development of autism in their children. (Reichenberg et al., 2006)(Sandin et al., 2016) Our study, however, produced a different result where no significant association between both parental ages and risk of ASD was found. A Danish case- control study by Larsson et al

displayed similar findings as our study; their findings stated there to be no increased risk of autism associated with high parental age after adjusted analyses, where multiple gestations were excluded to avoid associations between prematurity, obstetric complications, and birth weight in multiple births.(Larsson et al., 2005) In terms of maternal age alone, there are several reports that concluded just as our study where maternal age was found to be not significantly associated with risk of off-springs diagnosed with ASD.(Steinhausen, GÖBEL, Breinlinger, & Wohlleben, 1984) (E., M., A., & E., 1996) The most recent meta-analysis including twenty-seven studies summed up the currently existing evidence into the following; higher maternal age was associated with 41% increased risk of autism and higher paternal age was associated with 55% increased risk of autism.(Wu et al., 2017) However, it was identified by the authors that the heterogeneity among the studies was unlikely to have been fully accounted for in the analyses hence it is wise to interpret the results with caution.(Wu et al., 2017) There were limitations in the studies included that needs to be taken into consideration such as lack of reporting of important confounders namely, the other parent's age.(Wu et al., 2017) Our study, explored the other parent's age, although not exclusively as a variable, but, as part of our next variable which is the parental age gap.

d) Parental age gap.

A positive association between the difference of age between the mother and the father of the child with the risk of developing ASD was found. The risk of having a child with ASD proportionately increases with increasing age gap. A similar association such as our study was exhibited by a cohort study by Sandin S and colleagues where combined parental age effect showed an increased risk to have a child with ASD especially among parents with age gap of ten years or more (Sandin et al., 2016) Another cohort study by Croen et al, however, had opposite results where the difference in parental age gap was not significantly associated with ASD risk.(Croen et al., 2007) Despite large number of studies on the association between paternal and maternal age with ASD risk, there is, however, a lack of studies investigating the relationship between parental age gap and risk of ASD. This warrants the need for further studies on this presumed risk factor for ASD.

Apart from the limitations discussed above, our study is also limited by the methodology itself. This is a case control study hence, there would be difficulty in making a causal inference. Also, these findings are only representative of a time frame as our study does not investigate in a longitudinal manner in terms of the timeline. Lastly, low or poor response by the participating schools and respective parents of the children hinders this study to have larger sample size that would have been more desirable in increasing the power of this study.

CONCLUSION

Our study found significant association between obstetric mode of delivery, birth order and parental age gap with the odds of being diagnosed with ASD. Emergency Caesarean section, earlier order of birth in the family and increasing gap in parental age is positively associated with ASD risk. This study has its methodological limitations. Future studies with application of methodologies with a higher statistical power which can exhibit a more evident causal relationship are recommended. Research exploring not only the obstetric mode of delivery but also the association of the mode of delivery with underlying common known indications of the respective procedure need to be carried out. The relationship between birth orders with their respective sibship size needs further exploration, not only in terms of causal relationship but, also the possible underlying pathophysiology of this risk factor. Also, the cases included in this study mainly came from schools who are in the better spectrum of the disorder and the severe cases were not represented. Given the limited number of studies investigating the association between parental age gaps and the risk of ASD, more studies with a larger statistical sample are needed.

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Conflict of interest:

The authors declare no conflict of interest.

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THE DEVELOPMENT OF THE JAPANESE VERSION OF THE WORK AND MEANING INVENTORY (WAMI)

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ABSTRACT

The Work and Meaning Inventory (WAMI), which consists of 10 items, and was developed by Steger, Dik, & Duffy (2012) to measure multidimensional meaningful experiences in work. This study aimed to develop a Japanese version of WAMI (J-WAMI) and evaluate its reliability and validity. A questionnaire was administered to groups of Internet users ($N=534$) aged 23-69 who currently have full-time jobs. Confirmatory factor analysis and test-retest reliability over four weeks yielded promising results. Convergent validity of the J-WAMI was tested via correlations with meaning in life, satisfaction with life, and other work-related variables. This study suggests that our Japanese version of the WAMI is reliable and valid.

Keyword: meaningful work, meaning in life, WAMI scale

INTRODUCTION

Research on meaning in life suggests that work is one of the main sources of the meaning in adulthood (e.g., Dik, Sargent, & Steger, 2008). Efforts to understand such meaning from work has resulted in two similar ideas that have been used interchangeably, "work meaning" and "meaningful work". Dik, Steger, Fitch-Martin, & Onder (2013) argue that these two are not synonyms; the former refers to the type of meaning people derive from or attribute to their work, whereas the latter refers to work that is both positive and highly significant for the person engaged in it. This paper focuses specifically on meaningful work.

Meaningful work (MW) is related positively to presence of meaning in life, job satisfaction, organizational citizenship and well-being (e.g., Arnold et al., 2007; Chalofsky & Krishna, 2009; Littman-Ovadia & Steger, 2010). However, the definition of the MW has remains unclear.

Steger, Dik, & Duffy (2012) suggested that there are three primary facets on MW: (1) Positive Meaning (PM), (2) Meaning-making through work (MM), and (3) Greater good motivation (GG). Based on this theoretical framework, Steger et al. have developed the Work and Meaning Inventory (WAMI) which assesses multidimensional meaningful experiences in work. Through confirmatory factor analysis, the three-factor structure was validated.

In Japan, there is a word "Yarigai", which means "worth working for", or "purpose of doing something". Therefore, yarigai is a similar concept to MW. According to a survey that asked new employees about the purpose of their work other than meeting costs of living, the highest percentage was " yarigai and fulfillment through work" (40.9%) (Japan Management Association, 2018). In addition, when asked how important it is to the working company's contribution to society, more than 60% of new employees replied it was very important. These results show that meaningful work suggested is also important for Japanese employees. However, there is no Japanese scale to measure MW. The purpose of the present study is to develop of the Japanese version of WAMI and evaluate its reliability and validity.

METHOD

Participant and procedure

Responses on the measures were collected from 534 employees (261 women, 273 men, mean age=44.90, SD=13.34, range=20–69) via an online survey at Cross Marketing Inc. of 2018. To examine the test–retest reliability, a subsample of 387 individuals (182 women, 205 men, mean age=46.47, SD=13.13, range=20-69) answered the WAMI described below after four weeks.

This survey was conducted with the approval of the Kansai Welfare Science University Research Ethics Review Board (approval number: 18-27). All participants checked consent forms prior to participating. Participant anonymity was protected throughout using code numbers to link initial and retest surveys.

Instruments

Work and Meaning Inventory. The original English version of 10-item Work and Meaning Inventory (WAMI) was first translated by two psychologists. Next, the translated version was sent to the bilingual Japanese for back–translation from Japanese to English, Finally, one of the authors of WAMI checked the back-translation version comparing with the original version.

Other measures. We used other measures to assess the validity of WAMI: (1) the 10-item Meaning in Life Questionnaire (MLQ; Steger et al., 2006) to assess search and presence of meaning in life, (2) the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) to assess life satisfaction, (3) the 9-item Utrecht Work Engagement Scale (UWES; Schaufeli & Bakker, 2003) to assess work-related state of engagement, (4) the 4-item Brief Calling scale (Dik, Eldridge, Steger, & Duffy, 2012) to assess feeling they have a calling, (5) 8-item Career Commitment scale (Blau, 1985) to assess one's level of commitment to one's occupation or career field, (6) the 3-item job satisfaction scale to assess overall job satisfaction (Chen & Spector, 1991), (7) the 3-item Organizational Commitment scale (Allen & Meyer, 1990) to assess affective component of organizational commitment, and (8) the 6-item K6 scale (Kessler, 2002) to assess depression and anxiety.

RESULTS

Based on the three factors model of the original WAMI, we conducted the confirmatory factor analysis (AMOS 23.0) that were organized under a higher-order factor model. The fit was acceptable, $\chi^2 (df=32) = 185.16$; CFI = .95, RMSEA = .095; RMSEA 90% CI = [.08, .11]. Cronbach's alpha indicated sufficient internal consistency (PM = .85, MM = .80, GG = .73, overall = .91). Table 2 depicts the correlations between WAMI and other variables. WAMI was significantly and positively related to desirable variables and negatively related to depression as in the original English version. However, contrary to the original research, WAMI-PM subscale was positively related with MLQ-search for meaning. Test-retest reliability of WAMI-total ($r = .69$, 95% CI = [.63, .74]), PM (.67, 95% CI = [.61, .72]), MM (.59, 95% CI = [.52, .65]), and GG (.61, 95% CI = [.55, .67]) was also acceptable.

Table 1 Intercorrelations, Convergent, Discriminant, and Concurrent Validity of the WAMI Subscales (N=534)

	1	2	3	4
Meaningful work				
1 Meaningful work total score				
2 Positive meaning	.925**			
3 Meaning making through work	.916**	.794**		
4 Greater good motivation	.847**	.644**	.682**	
Meaning in life				
Presence of meaning	.650**	.630**	.543**	.567**
Search for meaning	.371**	.298**	.374**	.343**
Life satisfaction				
Satisfaction with life	.554**	.568**	.477**	.425**
Work Engagement				
Vigor	.670**	.635**	.614**	.546**
Dedication	.691**	.648**	.636**	.572**
Absorption	.632**	.597**	.581**	.519**
Calling				
Calling	.625**	.616**	.530**	.521**
Calling-seeking	.342**	.281**	.327**	.324**
Carrier commitment				
Carrier commitment	.622**	.623**	.571**	.462**
Job satisfaction				
Job satisfaction	.617**	.627**	.559**	.453**
Organizational commitment				
Affective commitment	.589**	.569**	.527**	.480**
Depression				
K6	-.289**	-.287**	-.256**	-.225**

** $p < .01$ * $p < .05$

DISCUSSION AND CONCLUSION

The goal of this study was to adopt the WAMI into Japanese and evaluate its reliability and validity. Confirmatory factor analysis indicated that the structural model of the Japanese version WAMI was harmonized with the original scale. The internal consistency and test-retest reliability were acceptable. This study also revealed the desirable correlation to the work-related variables and well-being. In addition, it should be noted that the correlation between the WAMI scales and MLQ-search was positive which was different from the original study. But, previous research on the MLQ found that the correlation between Presence and Search in Japan showed positive correlation in contrast to US (Shimai, Arimitsu, & Steger, 2019;

Steger, Kawabata, Shimai, & Otake, 2008). Based on these findings, it may be said that the results of this study are consistent.

In summary, this study shows that the Japanese version of WAMI is reliable and internally consistent. Further studies using WAMI in Japan would provide more information on Japanese employees' organizational health.

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DOES GENDER AND EXPERIENCE IN TEACHING SPECIAL CHILDREN IMPACT TEACHERS' KNOWLEDGE ON ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

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ABSTRACT

Despite the great attention received by attention deficit hyperactivity disorder (ADHD) in the teachers' discussion, little research is known about the ADHD knowledge among Malaysia teachers. Hence, this study extended the discussion by investigating teachers' knowledge of ADHD. While the gender and experience in teaching special children were examined as predictors of the study. The results also confirmed that experience teaching special children has a relationship with the teacher's knowledge of ADHD but has no relationship with gender differences. The findings may help special need teachers and early childhood practitioners understand how teaching experience on handling special need children influence their knowledge of ADHD. The study recommends the expansion of the research model by using longitudinal designs and multiple measures of other variables.

Keyword: ADHD, gender, teaching experience, teachers

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common mental health disorders observed in childhood (Schmiedeler & Schneider, 2014). According to the American Psychiatric Association (2014) report, there are about 5-7% of children were diagnosed with ADHD during the elementary years. This disorder can prolong into adolescence and adulthood (Barkley, 2005; Padilla, et al., 2018; Pierrehumbert, Bader, Thevoz, Kinal, & Halfon, 2006). There are three subtypes of ADHD stated in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), such as predominantly inattention, predominantly hyperactivity-impulsivity, and combined having symptoms of inattentive and hyperactivity-impulsivity (APA, 2013).

ADHD also commonly occurred with other troublesome behaviour disorders, such as oppositional defiant disorder (Elkins, et al., 2018; Wolfe & Mash, 2006). Children diagnosed with these disorders are not only exhausting their parents but also often to their teachers, and even their peers (Feldman, 2010; Morris et al., 2019). These children always experience difficulties in school because they often fail to pay attention to details, easily distracted (Baucum & Smith, 2004; Kos, Richdale, & Hay, 2006; Morris et al., 2019), have difficulties engaging in quiet activities, impatient in making comments out of turn (Baucum & Smith, 2004), often fail to complete schoolwork, and may have trouble getting along with other children (Shaffer & Kipp, 2014). Hence, teachers play an important role in the school environment as key educational figures in helping children with ADHD to overcome these obstacles (Vereb & DiPerna, 2004; Woolfolk, 2010). They are the one would determine whether children with ADHD can succeed in school (Pfiffner, Barkley, & DuPaul, 2006; Taylor, et al., 2019).

Besides, an early diagnosis is important so that students with learning disabilities do not feel frustrated and discouraged because they do not understand why they are having such trouble. They may also start to believe that their learning disabilities were beyond their control (Morris et al., 2019; Woolfolk, 2010). Therefore, it is vital that the teachers have certain professional training and knowledge about the diagnosis and treatment of ADHD to enable them to help these children in the class.

The exact cause of ADHD is still unknown although most experts felt that it is due to dysfunctions in the central nervous system (Barkley, 2005; Hinshaw, Zupan, Simmel, Nigg, & Melnick, 1997; Kim, King, & Jennings, 2019). Many children, occasionally show some characteristic of ADHD in their behaviours, and in some cases, they are often misdiagnosed or over-diagnosed. To deal with this symptom, children with ADHD were often given stimulant medication, such as Ritalin and other prescribed drugs (Kim, King, & Jennings, 2019; Woolfolk, 2010). These drugs may make some hyperactive children more manageable including their academic performances and social behaviours may appear dramatically improvements (Kim, King, & Jennings, 2019; Woolfolk, 2010). As a result, may be wrongly assumed by their parents and teachers that they have been cured. Conversely, these stimulants have negative side effects on the physical body, such as increased heart rate, interference the growth rate, causing insomnia, and other physical issues (Friend 2008). An analysis in Australia came to the conclusion that multimodal approaches to intervention are very efficient in ensuring prolonged and lasting effect. Hence, treatment with psychostimulants should be done by parents and teachers along with corrective procedures such as counselling, tuition and behaviour management (ADHD, 2016).

Motivation and positive reinforcement such as praises and compliments will affect children afflicted with ADHD positively and they will be able to execute high-interest tasks much better than usual (Carlson and Tamm, 2000). Hence, it is important to choose the correct teaching strategies since they can affect the children's capability in managing ADHD in relation to classroom behaviours. Expert teachers know their students. Thus, attaining information regarding ADHD will aid the teachers in understanding their students better, and this will also

prove to them that their teachers are committed to helping them be successful. There are plenty of studies done in order to scrutinize and analyse the knowledge, opinions and experiences of teachers about ADHD, however, most of these studies are done in the United States (Choo, 2013). Presently, the knowledge, opinions and experiences of teachers on ADHD in the local context are very lacking and there is an inadequate number of documented research materials (Choo, 2013). Henceforth, this research will be key in investigating the teachers' knowledge on ADHD, and comparing it to the other research done.

Furthermore, according to Deary et al. (2007), the variances of intelligence between genders are trivial, but there is apparently a large variance in scores between men themselves. Nevertheless, the recent research by Ismatullina and Voronin (2016) showed proof the self-reported intelligence of men have higher scores in comparison to that of women in varying cultures. By contrast, several researchers (i.e. Ahmed, Asim, & Pellitteri, 2019; Dasgupta et al., 2019) discovered women to obtain vastly greater intelligence values than men. This recent research lead to conclusion on gender differences in intelligence especially in digesting information. Hence, this research is important to reveal the differences between genders in comprehending the knowledge regarding ADHD.

LITERATURE REVIEW

Children with Attention Deficit Hyperactivity Disorder (ADHD)

Children with ADHD often find it difficult to obey school and classroom demands. Children have varying personalities and characteristics so they react differently from one another in different environment settings and especially if they go through different problems (Saad & Lindsay, 2010). Those involved with children with behavioural difficulties need to master the methods of monitoring and controlling the attention and focus of children since children's attention is a critical factor in handling their behaviour and social skills (Mowlem, et al., 2019).

As previously mentioned, ADHD is categorised under the learning disabilities group in the Malaysian education system. In order to determine whether the child has ADHD, screening and diagnostic processes are applied based on the criteria used internationally. The criteria used are based on the guidelines suggested by World Health Organization (WHO) in ICD-10, specifically the APA in the DSM-IV (Cerezo, et al., 2019; Saad & Lindsay, 2010). Legitimately, a medical professional or practitioners will perform or advocate the procedure. Special education programmes such as studying in special schools or regular schools with specialised integrated programmes only cater children diagnosed with severe hyperactivity or behaviour problems (Mioni, Capodiec, Biffi, Porcelli, & Cornoldi, 2019). Unfortunately, undiagnosed children with behavioural problems mostly remain in mainstream classrooms and because of their conditions, they will have poor and subpar performance in their academic and classroom activities (Saad & Lindsay, 2010).

Statistically, ADHD is a very common disorder in which 5% to 10% of children and 3% to 6% of adults are estimated to be afflicted worldwide as stated by the Attention Deficit Disorder Association. As for Malaysia, it presently has a prevalence rate of 3.9% (The Star Online, 2014). This statistic has shown the importance of teachers' knowledge on ADHD in aiding the afflicted children so that they can be prepared for the future. Also, significantly students with ADHD are to be part of inclusive kindergarten settings with appropriate and well-equipped classroom resources (Marks, Mlodnicka, Bernstein, Chacko, Rose, et al., 2009).

Experiential Learning Theory

Experiential Learning Theory (ELT) was used in this research as an supporting theory to connect gender and experience teaching special need children on teachers' ADHD knowledge. ELT describes learning as the means knowledge is attained via the transformation of experience (Kolb, 1984). In the ELT, Kolb (1984) expressed two distinct methods of gaining experience which are from concrete experience and abstract conceptualisation. Additionally, Kolb (1984) also determined two ways of transforming experience, which are reflective observation and active experimentation. These four modes of learning are typically depicted as a cycle. Case in point, concrete experience delivers information that serves as the foundation for reflection. Teachers integrate the information of ADHD knowledge and create abstract concepts from these reflections. After that, teachers implement these concepts to improve new theories about the ADHD information, which will then be actively tested. Lastly, by experimenting with their ideas, they will return back to gathering ADHD information through experience, cycling back to the beginning of the process. Going into specifics, some teachers may opt to gather ADHD information through reflection by studying the ADHD students. However, some teachers may be inclined to begin more abstractly, by reading and analysing ADHD information from reading materials like books and articles. Finally, Kolb (1984) stated that people who are considered "watchers" are more inclined towards reflective observation, while those who are "doers" are more likely to engage in active experimentation.

As a conclusion, the Experiential Learning Theory suggested by Kolb (1984) essentially points out that knowledge can be gained through experience. The implementation of ELT can be beneficial for aiding people examine and identify their own strengths when learning new things and addresses how learners can play to their own strengths and advantages as well as improving areas in which they are weakest. Therefore, this research used Kolb's ELT to clarify the relationship between the gender and teachers' teaching experience towards their knowledge on ADHD.

Gender and Experience Teaching Special Children on Teachers' ADHD Knowledge

ADHD is one of the most common childhood psychiatric disorders, with symptoms that are often present before school entry (Schmiedeler & Schneider, 2014) that affects an estimated 5-7% of children during the elementary years (APA, 2014). Therefore, teachers are important individuals in the process of a child being diagnosed with ADHD and receiving appropriate intervention. The reason being teachers, they are the first educators in kindergarten including

inclusive kindergarten. They play a pivotal role in the development of young learners. Through their engagement at this stage, they form an essential and lasting impact on a child's educational path including children with ADHD disorders (Carlin & Brianne, 2017). Particularly, a child begins their kindergarten education in a formal school setting, teachers need to have sufficient knowledge, experience and more support working with young learners who have special needs, i.e. ADHD. However, in a recent study, the teacher's experience is conversely, related to their concerns about ADHD symptoms (DuPaul, Reid, Anastopoulos, & Power, 2014).

The lack of training cited by multiple studies may be a significant obstacle to providing sufficient inclusive educational services to kindergarten students with ADHD (Reid, Vasa, Maag, & Wright, 1994). There are empirical evidence and anecdotal reports that teachers are not receiving enough training in ADHD, hence not prepared to support students with ADHD in the classroom (Carlin & Brianne, 2017). Although they practising positive attitudes towards working with students with ADHD, they also reported there are significant knowledge gaps and obstacles restrain their efforts to employ evidence-based intervention (Carlin & Brianne, 2017).

On the other aspects, research by Lawrence, Estrada, and McCormick (2017) had revealed culture, gender, and age as factors that affect the comprehension of ADHD by teachers. For instance, based on the gender of the student and teacher as well as where the teacher was socialised, ADHD behaviours were conceptualised and perceived distinctively. Lawrence, Estrada, and McCormick (2017) advocated that future research should explicitly investigate the effect of gender of the teacher on understanding, experiencing, diagnosing, and treating ADHD. The reason is due to the significant roles of teachers in the life of school-aged children, and they help provide optimal learning and the acquirement of social skills, which are especially crucial for the development of children with ADHD. Hence, it is important for this study to reveal either gender differences among teacher will give an affect towards their ADHD knowledge.

Likewise, research has been done regarding the functions of teaching experience in influencing teachers' teaching abilities. Based on the statement of Bradshaw and Kamal (2013), teachers who accumulated vast experience in teaching would be able to display a wider variety of teaching methods, perceive a wider band of classroom and face situations better. Hence, as teachers accumulate more experience, it becomes more probable that the teachers will end up as expert teachers. This will definitely, provide some argument where not all experienced teachers are experts and not all experts are experienced.

Additionally, Stormont and Stebbins (2005) and Youssef et al. (2015) showed that teachers who only obtain their information on ADHD from popular media might miss out important quality educational experiences in comparison to those who read journals with legitimate study, and this may reflect their knowledge on ADHD. These findings are not just significant to manage children in the class but also helpful for teachers to enlighten and instruct parents

and society on actual facts regarding ADHD, while also simultaneously eliminating false information related to ADHD.

In Malaysia, a study has revealed that many kindergarten teachers do not have adequate knowledge of ADHD (Choo, 2013). Their lacking knowledge regarding ADHD may lead to teachers being unable to support and handle the ADHD children in the classroom. On the other hand, if they have ample knowledge on the matter, they will be able to empathise with children and be more understanding of the behavioural problems since the cause is due to biological reason (Harlan, & Gephart, 2019). Hence, teachers with sufficient knowledge on ADHD will be more accommodating and supportive of ADHD children in classroom.

Therefore, in order to be an effective teacher for the students of ADHD, the teacher must be equipped with sufficient ADHD knowledge. This includes the knowledge on the characteristics of the children with ADHD and also must have enough knowledge on treatment of ADHD. Based on the explanation above, this study will explore the teachers' knowledge on ADHD based on gender differences and experience teaching special needs as shown in Figure 1.

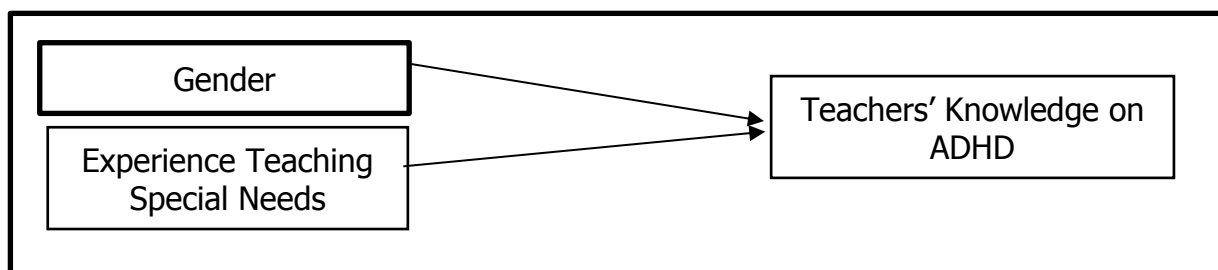


Figure 1: Conceptual Framework

- H1 There is relationship between gender differences and knowledge on ADHD among teachers.
- H2 There is relationship between experience teaching special children towards teachers' knowledge on ADHD.

METHODOLOGY

This study is based on a general survey method. The data collections using a self-report questionnaire were carried out through a collaborative effort from thirty Diploma and Advance Diploma in Special Education teachers in Penang. The questionnaires were distributed by them to the teachers at their respective schools based on convenient sampling method. The questionnaire is intended to assess teachers' general knowledge of the fundamental concepts involved in the diagnosis and treatment of ADHD. Data from this study were analysed using IBM SPSS software 23.

Samples

A total of 145 teachers were selected to participate in this survey. They were among the teachers' population in Penang who teach in the main stream lower primary schools, special needs schools, and other private kindergarten schools in Penang. They were later named as respondents in this study.

Instrument

The instrument used in data collections is the modified K-ADHD scale by Jerome, Gordon, and Hustler (1994). It consisted of two parts. The first part is about respondents' demographic information such as gender, age, teaching experience, experience teaching special children, and training in special education. The second part consisted of 20 true and false questions regarding diagnosis and treatment of ADHD.

RESULTS AND DISCUSSIONS

Demographic Profiling of the Respondents

Table 1 presents the demographic information of the respondents in this study. Majority of the respondents who participated in this study are female respondents. There are 116 (80.0%) female respondents and only 29 (20.0%) are the male respondents. The results also shown most of the respondents have experience teaching special children with a total of 98 (67.6%) and the other 47 (32.4%) respondents have no experience teaching special children. Specifically, there were 58 (40.0%) respondents had at least less than 5 years of experience teaching special children, 27 (18.6%) respondents had 5 to 10 years of experience teaching special children. There were only 13 (9.0%) respondents had more than 10 years of experience teaching special children. Therefore, it can be assumed that the respondents have some knowledge and understanding of ADHD.

Table 1: Demographic profiling of the respondents.

Demographic Factor			Category	Frequency (N=145)	Percentage (%)
Gender			Male	29	20.0
			Female	116	80.0
Experience Teaching Special Children			Yes	98	67.6
			No	47	32.4
Years of Experience in Teaching Special Children			None	47	32.4
			< 5 years	58	40.0
			5 – 10 years	27	18.6
			> 10 years	13	9.0

Descriptive Analysis

Table 2 presents the mean and standard deviation of every studied variable. The standard deviation value for all variables ranged from 0.15 to 0.47. The standard deviation value smaller than 2.00 indicated the scores are distributed normally.

Table 2: Mean and standard deviation of studied variables (N=145)

Variables	Mean	Std. Deviation
Gender	1.82	0.44
Experience Teaching Special Children	1.68	0.47
ADHD Knowledge	1.28	0.15

Specifically, Table 3 showed that there were 111 (77%) respondents who had scored 61 to 100 marks of the true and false questionnaire. The results obtained were encouraging as showed in Figure 2. The graph was more positively skewed which indicated that most of the respondents in this study were able to answer most of the questions correctly. It is also implied that the majority of the respondents had a certain knowledge of ADHD. However, there was a minority of the respondents who did not score well. The reason may be due to not having adequate knowledge of ADHD. To overcome this, it is suggested that more talks, workshops and/or training programs about ADHD and other learning disabilities can be implemented to increase teachers' knowledge and understanding about the disorder. Another reason may be due to respondents had a problem understanding the English language used. Therefore, it is suggested that a bilingual questionnaire can be introduced for future study in Malaysia context.

Table 3: Number of response versus range of scores of correct answers

Range of Scores	Number of Respondents	Percentage (%) of Respondents
21-30	1	1
31-40	3	2
41-50	14	10
51-60	16	11
61-70	39	27
71-80	28	19
81-90	36	25
91-100	8	6
Total	145	100

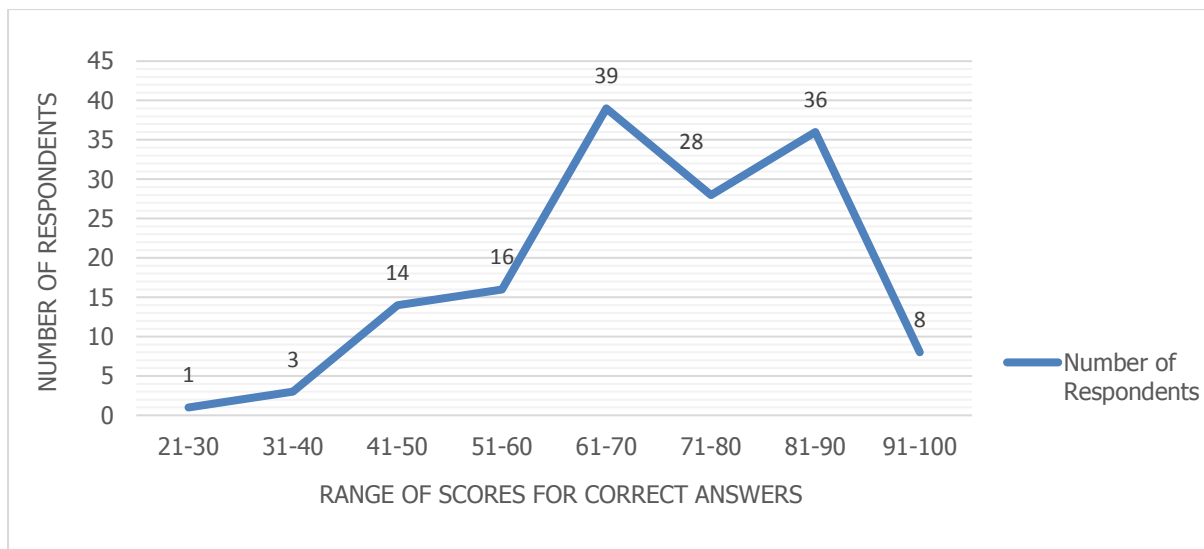


Figure 2: Number of Respondents Verses Range of Scores for Correct Answers

Additionally, Table 4 showed the overall analysis on the percentage (%) of respondents with correct answers for each survey item. The results revealed that item 2, item 5, and item 10 had recorded the lowest number of respondents answered correctly. Item 2 regarding the dietary issue, only 72 (49.7%) respondents had answered the survey questions correctly. This may indicate that there are still many people who had misconceptions on this issue. Many may still believe that sugar and food additives were the cause of ADHD. But, according to the National Institute of Mental Health (NIMH, 2008), more research had found that sugar is not linked to ADHD symptoms. As for item 5 which is about ADHD, only 65 (44.8%) respondents had answered the questions correctly. The reason may be due to unclear with the word 'always' used in the statement. Many people may not know that ADHD has three subtypes. Therefore, not all ADHD children constantly need a quiet environment to concentrate on tasks. For item 10, there were 73 (50.3%) respondents had correctly answered which indicated that still have almost 50% of the respondents had some misconception about ADHD. They believed that ADHD children can outgrow their disorder and as normal as adults. However, research had found that this disorder can continue to persist it to adulthood (NIMH, 2008; Woolfolk, 2010).

Table 4: Overall analysis on percentage (%) of respondents with correct answers for each survey item

Survey items	Number of respondents	Percentage (%) of respondents who answer correctly
1	118	81.4
2	72	49.7
3	118	81.4
4	94	64.8
5	65	44.8
6	105	72.4
7	99	68.3
8	125	86.2
9	98	67.6
10	73	50.3
11	89	61.4
12	92	63.4
13	125	86.2
14	127	87.6
15	122	84.1
16	113	77.9
17	122	84.1
18	90	62.1
19	119	82.1
20	118	81.4

In summary, despite items 2, 5 and 10 showed lower respondents able to answer the questions correctly, but, the overall survey findings had shown most of the respondents have a good understanding of ADHD. For example, there were nine items in the questionnaire like item 1, 3, 8, 13, 14, 15, 17, 19, and 20 showed more than 80.0% of the respondents had answered the questions correctly. The rest of the eight items like item 4, 6, 7, 9, 11, 12, 16, and 18, each item has at above 60.0% of the respondents had answered the questions correctly. Besides, item 8 and item 14 which related to medication in treating ADHD, the respondents' responses had revealed that most of them (above 86.0%) had agreed that medications alone would not treat the disorder. The children still need special help in their learning (Doggett, 2004).

Mann-Whitney Test

The following Table 5 indicated Mann-Whitney test of gender and experience teaching special children on ADHD. The results shown that only experience teaching special children has impact towards teachers' knowledge on ADHD. While, gender shown has no impact towards teachers' knowledge on ADHD. Thus, this study supported hypothesis H2 and rejected hypothesis H1.

Table 5: Mann-Whitney test of gender and experience teaching special children on ADHD knowledge.

Variables	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Gender	1607	2042	-0.16	.873
Experience Teaching Special Children	1198.5	6049.5	-4.697	.000

The result emphasized that respondents understanding and knowledge of ADHD was associated with their teaching experience with special children. However, gender differences among teachers were not significant. The result could be due to only a small number of male respondents in this study as compared to the female respondents. Therefore, it is suggested that a similar number of male and female participants is required for more accurate results in terms of gender differences in future research.

Commonly detected since childhood, ADHD is a chronic disorder which lead to prolonged difficulties in the educational outcome, safety, and hinders the ability to maintain a job as an adult (Walczak & Estrada, 2017). Additionally, children with ADHD tend to display socially troublesome behaviour such as problem in maintaining eye contact, intruding personal space, and interrupting others (Lawrence, Estrada, & McCormick, 2017). Unfortunately, the implications of these behaviours are not only limited to disrupting the ADHD children’s learning process, but may also adversely affect their ability to communicate with others and thus, negatively influence their social relationships.

Furthermore, the companions and peers of the children who exhibit the symptoms of ADHD symptoms may regard them negatively (Hoza, 2007; Mueller, Fuermaier, Koerts, & Tucha, 2012) and these peers who do not experience the same attentional issues could lead to higher probability of the ADHD children experiencing depression and anxiety. It is unfortunate but even adults, including teachers and healthcare providers, may also look at them negatively (Hamed, Kauer, & Stevens, 2015; Harpin, 2005). Therefore, teachers must have sufficient knowledge regarding ADHD since they have to face the difficulties of communicating with ADHD children on a daily basis such as ensuring children remain on task, handling classroom disruptions, and optimising learning. Over time, teachers who interact and communicate with ADHD children will have their impression and awareness improved, and in turn influence how they address future interactions with students suffering from attentional issues. From the previous experience in handling special needs children including ADHD will increase teachers’ knowledge on ADHD as explained in Experiential Learning Theory (Kolby, 1984).

Likewise, additional support from the school administrators and the school boards are important as well (Carlin & Brianne, 2017). School systems may consider having continuous in-service training programmes to enhance the skills of teachers who are already in classrooms with students who have ADHD (Kos, Richdale, & Hay, 2006), including restructuring the

classroom environment and designing effective classroom-based interventions that cater to students with ADHD. Besides, schools may also need to consider how they support teachers' self-care during times of stress and how the school promotes resiliency for all (Miller & Brooker, 2017).

CONCLUSION

The knowledge about ADHD is imperative in making steps towards considering and creating treatment recommendations. The previous study has found that teachers with more knowledge about ADHD will be more effective in managing children with this disorder in their classroom. Comparatively, this survey also revealed the importance for teachers to acquire more comprehensive knowledge about this disorder so that children with this condition could get the necessary help that they need. Schools together with the Parents Teachers Association (PTA) are encouraged to work with those in healthcare to organizing courses, workshops, talks and providing parent training programs on ADHD. Moreover, this survey findings also bring awareness to the teacher educators the needs to develop a better education program. Also, the need to form strong support groups among the teachers in Penang especially to those who are undertaking the challenging task of teaching students with special needs. It has also opened up ideas for future studies such as to include larger and more representative samples from other states in Malaysia for stronger implications to relook at the curriculum development structure for special needs education and to have more special education training programmes for these teachers by medical professionals.

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DOES WORK-FAMILY CONFLICT PREDICT DANGEROUS AND DISTRACTED DRIVING AMONG DRIVERS?

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ABSTRACT

This study aimed to examine the relationships between work-family conflict, dangerous driving and distracted driving. Self reported questionnaire was completed by 256 Malaysian drivers, aged between 20 to 60. The instrument assessed the frequency of engaging a range of dangerous driving (i.e risky, aggressive, negative emotional) as well as distracted driving behaviours. Respondents also reported four dimensions of conflict including two forms of work-family conflict (time and strain based) and two directions of work family conflict (work interference with family, WIF and family interference with work, FIW). Male drivers reported engaging in aggressive driving behaviour more frequently than female drivers. Younger drivers reported engaging in risky, aggressive and distracted driving behaviours than older drivers. Analyses showed that both time-and strain-based FIW ($p < .05$) significantly predicted risky driving. Aggressive driving was significantly predicted by strain-based FIW ($p < .05$). Strain-based WIF ($p < .01$) and FIW ($p < .05$) predicted negative emotional driving. No predictive effect of work-family conflict was found in relation to distracted driving. In light of the findings, stress from work-family conflict has potential to spillover and impact driving behaviours. Hence, future research into interventions designed to reduce conflict and help employees cope effectively with such stressor may have promise for reducing dangerous driving behaviours.

Keyword: work-family conflict, dangerous driving, distracted driving

INTRODUCTION

Road injuries and fatalities are a growing concern in Malaysia. In Malaysia, there has been a steady increase of reported traffic accidents within a decade and killing more than 6,000 people each year (Malaysian Institute of Road Safety Research, 2017). Evidence from past research and reviews (Jafarpour, & Rahimi-Movaghar, 2014) suggest that, the contributing factors of traffic accidents generally fall into three categories namely: firstly, environmental cause such as accident-prone roads and weather factor, secondly, vehicle condition including safety maintenance, and finally, human factors such as driver's mental state, driving behaviour, violations and errors. However, it has been well documented that human factor appears to be by far as the leading determinant of traffic accidents (Ulleberg & Rundmo, 2003). Early data showed that the driver's behaviour is the main cause of road accidents,

contributing to 76.1% of all the causes of road accidents (Suret, 2001). Previous studies (Ge et al. 2014; Rowden, Matthews, Watson & Biggs, 2011) highlight the importance of emotional state such as psychological stress are closely link with traffic accidents. Despite the alarming rate of morbidity and mortality rates of road traffic accidents accident, it is surprising that little is known for the moment about the evidence for the predictive value of stress resulting from work-family conflict within driving literature.

LITERATURE REVIEW

Work-family conflict is characterised by the employees' struggle to integrate the conflicting demands of work and family roles (Voydanoff, 2002). Research also suggest a bidirectional dimension of work-family conflict, where work can interefere family (work interefere with family; WIF) and family can interfere with work (family interefere with work; FIW). Work-family conflict can be important stressor events because they threaten valued resources of time and energy (Greenhaus & Beutell, 1985). Such events can induce negative emotions such as anxiety, uneasiness, anger (Cohen, 2000) and negative behaviours such as aggesion and violence (Wilkowski & Robinson, 2008), which may heighten risk of unsafe driving outcomes and related emotions that could decrease driving alertness and judgment. Existing driving studies for instance, conducted among Malaysian drivers has examined anger, aggression and road rage behaviour (Sullman, Stephens & Yong, 2015) and found positive relationships between aggressive form of anger expression and crash related condition as well as relationships between aggressive tendencies and recent road rage behaviour. Prior research has shown the association between various type of stressors and unsafe driving, as evidenced by associations between various indices of stress and crash involvement (Rowden, Matthews, Watson & Biggs, 2011). For instance, Ge et al. (2014) found that general perception of stress was correlated with dangerous driving behaviour while work related stress was related to driving anger (Montoro, Useche, Alonso, & Cendales, 2018) and risky driving (Havarneanu, Măirean, & Popuşoi, 2019).

While the negative consequences of work-family conflict on different fields including health related outcomes and health behaviours such as eating and exercise have been documented (Allen, Herst, Bruck, & Sutton, 2000; Shukri, Jones & Conner, 2018), to date, hardly any literature has addressed the work-family conflict in safety-critical settings (Wei et al., 2016). This study addresses the gap in the literature by examining the predictive effect of work-family conflict on dangerous and distracted driving behaviours among Malaysian drivers. In particular, the present study attempts to assess the relationship between two types of demands: time- and strain-based of each direction of conflict (i.e. WIF and FIW) in relation to dangerous driving and distracted driving. Based on Carlson et al. (2000) the concept of time-based demands reflects the idea that time is a fixed resource, and hence that time spent at one domain subtracts from the time available for the other domain. Strain-based demands, by contrast, may exert a negative influence on work-life balance through mechanisms energy depletion that could result in fatigue, stress and negative emotions.

METHODOLOGY

Participants

The total sample included 256 drivers recruited from their workplaces, with 52.3% women and 47.7% men. The data reported in this study were provided by respondents from three cities in Malaysia. The age range was 18-60 ($M = 37.9$, $SD = 7.44$). The age of 20 to 30 was identified as young drivers ($n = 142$, 55.5%) and 31 and above as older drivers (114, 44.5%).

Measures

Dangerous driving

Dangerous driving was measured using a research instrument measuring three distinct constructs namely aggressive driving, risky driving, and negative emotional driving (Dula and Ballard, 2003). The items were rated on a 5-point Likert scale ranging from 1 (never) to 5 (always).

Distracted driving

The Questionnaire Assessing Distracted Driving (QUADD; Welburn et al., 2010) was used to assess distracted driving by asking how often the participants engage in a non-driving related activities (i.e. cell phone conversation, text messaging use, using GPS) that may divert their attention from driving task. Participants rated the items on 5-point scales, from 1 (never) to 5 (always).

Work-family conflict

Time-based and strain-based work-family conflict, for each direction of conflict were measured using scales developed by Carlson et al. (2000). 5-point Likert-type response scale that ranged from 1 (strongly disagree) to 5 (strongly agree) was used.

RESULT

Descriptive statistics

The means and standard deviation are presented in Table 1. Pearson's correlations were used to examine the associations between work-family conflict variables and each driving behaviour. Of driving behaviour, participants reported higher engagement in negative emotional driving in comparison to aggressive and risky driving. In general, participant also reported experiencing more work related conflict (WIF) than family related conflict (FIW). Correlation analyses suggest that the work-family conflict variables were all significantly correlated with aggressive, emotional and risky driving. While other work-family conflict variables were non-significant, strain based WIF was weakly correlated with distracted driving.

Table 1: Means, standard deviations, correlations among study variables

	1	2	3	4	5	6	7	8
1. Time based WIF	-							
2. Time based FIW	.61**	-						
3. Strain based WIF	.62**	.55**	-					
4. Strain based FIW	.43**	.57**	.60**	-				
5. Aggressive driving	.19**	.24**	.20**	.32**	-			
6. Emotional driving	.23**	.26**	.37**	.37**	.62**	-		
7. Risky driving	.17**	.26**	.16**	.29**	.51**	.51**	-	
8. Distracted driving	.10	.98	.16**	.15	.36**	.38**	.40**	-
Mean	8.53	7.46	8.54	6.36	12.39	23.80	18.30	15.62
SD	3.01	2.65	3.02	2.67	5.21	6.71	6.28	4.33

Predictors of dangerous driving

Results from regression model for each subscale of dangerous driving and distracted driving are presented in Table 2. Hierarchical regression analyses were used to examine the predictive effect of demographic variables (gender, age, shift work, marital status and children) and work-family conflict variables (time based WIF, time based FIW, strain based WIF, and strain based FIW). Demographic variables were entered on step 1, and work-family conflict domains on step 2. The dependent variables were dangerous driving subscales and distracted driving.

Demographic variables accounted for 8% of the variance on step 1 of the regression predicting aggressive driving ($R^2 = .08$, $F(5, 231) = 4.13$, $p < .001$), where age and gender were significant predictors. Hence, men and younger individuals were more likely to report aggressive driving. Adding work-family conflict on step 2 produced a significant increment in explained variance (R^2 change = .15, $F(4, 227) = 4.75$, $p < .001$); with strain-based of FIW emerged as independent predictor.

For hierarchical regression predicting negative emotional driving, working shift work emerged as significant predictor ($R^2 = .03$, $F(5, 231) = 1.55$, n.s) on step 1; indicating shift workers is related to increased negative emotional driving. Inclusion of work-family conflict added 17% (R^2 change = .17, $F(4, 227) = 9.83$, $p < .001$) to explained variance. Strain based WIF and strain based FIW were significant predictors, such that higher strain resulted from both WIF and FIW was related to increase negative emotional driving.

Both marital status and age were significant predictors of risky driving ($R^2 = .08$, $F(5, 231) = 4.25$, $p < .001$), such that single and younger participants were significantly more likely to involve in risky driving. The addition of work-family conflict variables at step 2, significantly improve the model, accounting for a total of 16% of the variance (R^2 change = .16, $F(4, 227) = 5.47$, $p < .001$). Time based FIW and strain based WIF emerged as important predictors.

Predictors of distracted driving

Demographic variables were entered on step 1 of the regression involving distracted driving, accounting for 5% of the variance ($R^2 = .05$, $F(5, 231) = 2.72$, $p < .05$), such that younger participants were more likely to report distracted driving. Work-family conflict variables were entered on step 2. The results indicated that work-family conflict variables did not account for statistically significant proportion of variance in predicting distracted driving (R^2 change = .04, $F(4, 227) = 2.1$, n.s).

Table 2: Regression analyses predicting aggressive, negative emotional, risky and distracted driving behaviours.

Step/Predictors	Predicting aggressive driving		Predicting emotional driving		Predicting risky driving		Predicting distracted driving	
	Step1 β	Step2 β	Step1 β	Step2 β	Step1 β	Step2 β	Step1 β	Step2 β
1. Demographic variables								
gender	-.39**	-.37**	-.17	-.22	-.21	-.13	-.17	-.22
marital	-.34	-.29	-.10	.00	-.50*	-.49*	-.03	.02
children	.42*	.30	-.04	-.14	.35	-.22	-.02	-.06
shift work	-.26	-.07	-.50*	-.23	-.11	.08	-.18	-.06
age	-.26*	-.26*	.01	.00	-.40**	-.39**	-.40**	-.41**
2. Work-family conflict variables								
Time based WIF		.03		-.02		.01		.01
Time based FIW		.02		-.03		.17*		-.07
Strain based WIF		.03		.27**		-.05		.16
Strain based FIW		.21*		.18*		.18*		.07
R^2	.08	.08	.03	.03	.08	.08	.05	.05
ΔR^2	.15	.07	.17	.14	.16	.08	.09	.04

DISCUSSION

The aim of the current study was to examine the role of work-family variables in self-reported engagement in dangerous and distracted driving. Of the demographic variables, age was found to be the most important and consistent determinant of unsafe driving behaviours. Specifically, in this study, younger drivers were identified as a risk group in regard to involvement in aggressive, risky and distracted driving. This supported previous research that younger drivers are more aggressive (Shinar & Compton, 2004) and overrepresented in road crashes, traffic deaths and injuries than old groups (Harbeck, Glendon, & Hine, 2018; Scott-

Parker, & Oviedo-Trespalacios, 2017). It has been suggested that aggressive and risky driving behaviours among younger drivers can be induced by a number of factors including personality variables such as sensation seeking, aggression (Scott-Parker et al., 2013), cognitive immaturity, inexperience related factors (Shope, 2006) and perceived risk (Harbeck et al., 2018). It is particularly noteworthy that, results of this study indicate that young drivers were involved in distracted driving compared to older drivers. Previous investigations suggest that young drivers limited driving experience, youthful characteristics (Gershon et al., 2017) are among important factors that contribute to their higher risk to engage in a non-driving related activity associated with distracted driving.

The results also found that related demographic variables, being single and not having children as important predictors of risky driving and aggressive driving respectively. Such results support past research indicating single people take more risks while driving than married people (West et al., 1996). Similarly, Whitlock et al. (2004) found that never married participants had twice the risk of driver injury as married participants, partly because single people are generally greater willingness to take risk while driving (West et al., 1996). In addition, a classic study (Harrington, & McBride, 1970) found that single persons on average reported a greater number of traffic violations than married persons. Finally, this study also found the evidence that that aggressive driving is gender related, supporting accumulating studies that males were more likely to commit aggressive driving behaviors, while women were much less likely to be aggressive (Sârbescu, & Maricuțoiu, 2019, Shinar & Compton, 2004).

This study provides the evidence that strain based rooted from FIW are particularly detrimental to driving behaviours. That is, strain based FIW significantly increased all types of dangerous driving; aggressive, emotional and risky driving behaviours. Of note, strain based originate from WIF was predictive only in the case of negative emotional driving. The findings might best explained by the fact that strain stems from conflicts (i.e. particularly family related sources) may lead to cognitive preoccupation with the sources of distress or reduce psychological and physical energy (Frone, 2003) and therefore, can create psychological distress and other negative emotions such as anger, irritability, anxiety and fatigue. Such conditions may in turn affect adverse driving performance. In the case of aggressive driving behaviour, for instance, it is possible that stress from family life (i.e. endless house chores, arranging kids school schedules, kids chaos) may manifest as strain in a number of ways (Rowden et al., 2006) including negative emotions and aggressive behaviours across a variety of situations (Liu et al., 2014), that is, it is likely that aggression predicts behavioural aggression in driving contexts (Dula & Ballard, 2003). Results of a study (Nesbit et al., 2006) for instance, suggest that the negative emotion (i.e anger) is positively associated with aggressive driving, partly through the mechanism of behavioural expression of anger.

In short, the aforementioned explanations may implies that negative emotions are potentially mediating the effects between work-family stressors and each dangerous driving behaviour. This is consistent with the notion that previous studies have found the relationship between negative emotions and driving (Richer & Bergeron, 2012; Trogolo et al., 2014), particularly in the case of negative emotional driving, as the construct itself implies the experiences of anger, frustration, provocation and irritation while driving (Dula & Ballard, 2003). In relation to risky driving, previous study (Hu, Hie & Li, 2013) found that a more

negative mood resulted in higher risk perception, a higher attitude toward risky driving and a higher self-reported risky driving.

Finally, time based FIW was found to be related to increase risky driving. This may be explained by the notion that time pressures associated performing family roles may increase driver's involvement in risky driving such as race a slow moving vehicle, cross double line and speeding because holding multiple roles may compete for a person's time. Research has found that being a hurried driver is associated with a variety of risky driving behaviours as hurried drivers also reported greater levels of frustration and impatience with other drivers, suggesting that they have difficulty in withstanding or coping with negative psychological states when driving (Beck, Daughters, & Ali, 2013).

CONCLUSION

Given little conceptual and empirical attention has been devoted to understanding the link between stress of work-family conflict and driving behaviours, no reasonable conclusions can be drawn at the moment. Further research is needed to replicate the findings and further explain the potential mechanisms of work-family conflict and unsafe driving. Nevertheless, the finding of the relative effect of demographic factors and strong impact of different forms of work-family conflict, particularly related to conflict of family roles that have unique consequences on unsafe driving behaviours is important for the area of traffic safety. The results highlight the fact that road safety interventions should target the characteristics of the drivers, and it is of particular concern for young drivers. In light of the findings, stress from work-family conflict has potential to spillover and impact driving behaviours. Hence, future research into interventions designed to reduce conflict and help employees cope effectively with such stressor may have promise for reducing dangerous and unsafe driving behaviours.

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THE DUAL-FACTOR MODEL OF MENTAL HEALTH FOR JAPANESE ADOLESCENTS: LATENT GROWTH CURVE ANALYSES OF PSYCHOSOCIAL OUTCOMES

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ABSTRACT

The dual-factor model was proposed as a comprehensive framework that incorporates both positive subjective well-being and traditional negative indicators of mental illness. This model has been applied to assess and understand the mental health of youth in the West, yet its validity has yet to be verified in Japanese adolescents. The present three-wave longitudinal study provided further evaluation of the utility of the model in understanding the trajectories of psychosocial functioning for high-school students in Japan. Life satisfaction, behavior problems, and the psychosocial adjustment of a sample of 242 high-school students were assessed via self-report instruments three times at one-year intervals. Students were classified into one of four distinct groups based on having high/low PTH and high/low SWB. Using latent growth curve analyses, we explored whether the groups showed distinct trajectories in psychosocial outcomes across a 3-year period. The dual-factor model was supported through the identification of different patterns of temporal changes in psychological outcomes between the groups. The results highlighted the importance of incorporating both positive and negative indicators of mental health to fully understand the different trajectories of psychosocial functioning and provide effective intervention programs.

Keyword: Dual-factor model of mental health, psychosocial outcomes, adolescence, longitudinal study

INTRODUCTION

According to a basic conception of mental health, the absence of distress or difficulties does not guarantee individual wellness (Maddux, 2005). For example, people that do not present with specific psychological symptoms do not necessarily function optimally in daily life (Keyes, 2002), whereas youth with serious psychopathology do not necessarily experience lower

levels of life satisfaction relative to healthy peers (Bastiaansen, Koot, & Ferdinand, 2005). The burgeoning need to consider indicators of positive mental health, alongside the emergence of positive psychology, which placed emphasis on the positive characteristics and functioning necessary to actualize happiness (Seligman & Csikszentmihalyi, 2000), led to the conceptualization of mental health model that integrated risk or illness with more optimal human functioning (Keys, 2002).

The dual-factor model (DFM) of mental health (Greenspoon & Saklofske, 2001) conceptualizes mental health as comprised of two continuous dimensions: psychopathology (PTH) and subjective well-being (SWB). These dimensions of DFM - high or low SWB and high or low PTH can be discretely and uniquely combined to split the general population into four groups (Suldo & Shaffer, 2008): Complete Mental Health, Symptomatic but Content, Vulnerable, and Troubled. The utility of the DFM of mental health has been validated in studies of adult well-being (Keys, 2002) and youth psychosocial and academic functioning, yet the research conducted has been predominantly cross-sectional and aimed at Western populations. Therefore, the present study analyzed a three-wave survey of Japanese adolescents to further validate the relationships between DFM group membership and subsequent psychosocial functioning as well as to attempt to extend the findings cross culturally.

LITERATURE REVIEW: Dual-Factor Model of Mental Health

Since Greenspoon and Saklofske (2001) introduced the DFM of mental health and revealed group differences across temperament, self-concept, locus of control, and interpersonal relations, several studies have examined the utility and validity of the model in youth populations, including elementary (Greenspoon & Saklofske, 2001), middle (Antaramian, Huebner, Hills, & Valois, 2010; Lyons, Huebner, Hills, and Shinkareva, 2012; Suldo & Shaffer, 2008; Xiong, Qin, Gao, & Hai, 2017), and high school students (Moore, Dowdy, Nylund-Gibson, & Furlong, 2019; Suldo, Thalji-Raitano, Kiefer, & Ferron, 2016), as well as college students (Eklund, Dowdy, Jones, & Furlong, 2011). For example, Suldo & Shaffer (2008) evaluated the utility of the model with US middle school students and revealed significant mean differences on various measures of school functioning among all four groups. Antaramian et al. (2010) found that individuals low in SWB and PTH were at risk for diminished school engagement and closely resembled the most troubled adolescents. Lyons et al. (2012) used logistic regression analyses and found that aside from personality and stressful life events, parental support differentiated the vulnerable and troubled groups from the positive mental health group.

Suldo, Thalji, and Ferron (2011) conducted the first longitudinal examination of the relationships between the students' mental health status and subsequent academic functioning 1 year later. Their results indicated that students' initial mental health group predicted changes in two areas of school functioning: GPA and attendance. Kelly, Hills, Huebner, and McQuillin (2012) found support for the DFM by revealing the stability and changes in the mental health status of US middle school students. Youth with complete mental health had the most stable status and were the least troubled, while changes in mental health

status were predicted by family and peer support for learning. An investigation on Chinese adolescents provided similar findings on the stability and dynamics of mental health status over a year (Xiong et al., 2017). The latent class analysis of longitudinal trends identified four groups comparable to DFM mental health status and found under 24% of adolescents remained in the same class over three years (Moore et al., 2019). However, most longitudinal studies were short-term and ranged from several months to a year.

Overall, current studies examining the DFM support the assumption that measures of positive indicators of functioning provide significant supplementary explanatory information that contribute to formulating a comprehensive understanding of child and youth health. However, most empirical studies on the DFM in adolescent health were conducted in Western countries and were short-term, ranging from several months to a year. As such, the model ought to be assessed in more diverse samples from different cultures to expand its ecological validity (Xiong et al., 2017), and more studies spanning several years are necessary to empirically test the longitudinal relationship between the DFM membership and adolescent psychosocial functioning (Moore et al., 2019).

In Japan, the increase of psychological problems among children and adolescents such as depression, suicide attempts, school bullying, and withdrawal represent one of the grave concerns among society at large (Ministry of Education, Culture, Sports, Science & Technology, 2017). Thus, an in-depth understanding of adolescent mental health is essential for effective intervention and prevention and facilitating a foremost public goal: raising happy and healthy children (Park, 2004). The current study aims to provide a further examination of the utility of the DFM for assessing adolescent health in Japan. Given recent research has indicated that high school years undergo various mental health challenges (Merikangas, Nakamura, & Kessler, 2009), the study utilized a three-wave survey conducted in the high school stage. We investigated whether DFM group membership demonstrated different trajectories in self-rated psychosocial functioning over 3 years.

METHODOLOGY

Participants and Procedure

The dataset analyzed in this study forms a part of a larger research project investigating the effects of the home and school environment on the QOL (Quality of Life) of Japanese high school students (Matsumoto, Murohashi, Yoshitake, Furusho, & Sugawara, 2010). Candidate schools were randomly selected from the central region of Japan. Four out of 20 schools were willing to participate in the present research while only three schools participated over the entire three-wave annual survey. In the fall/winter of 2008, grade-7 students ($N = 261$, mean age = 15.9, girls 65.5%) completed the questionnaires during class, and these were later followed up in 2009, and 2010. The attrition was minimal. Only 1 student did not have data on all 3 waves but once at Time 2. Consent forms were sent out to participant parents and collected by the teachers. The institutional review board of the second author approved of the protocol of the present study.

Student IDs were assigned to each child by the survey company to anonymize the participants - said personal information were not disclosed to the researchers. Teachers

distributed the self-report questionnaire packets during the homeroom period in regular classroom settings. Students were informed orally by the teacher who read the instructions on the front page of the questionnaire ensuring participants that their data was confidential, participation was voluntary, and that they could withdraw their consent (at any point in time).

Measures

SWB. We assessed life satisfaction as a positive indicator of functioning by using Students' Life Satisfaction Scale (SLSS: Huebner, 1991). This 7-item measure was rated on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The SLSS has sound psychometric properties with Japanese adolescents (Yoshitake & Sugawara, 2017). The reliability coefficients were .76, .78, and .80 for T1, T2, and T3 respectively. The responses were summed such that higher scores indicated more positive functioning.

PTH. The Strength and Difficulties Questionnaire (SDQ: Goodman, Meltzer, & Bailey, 1998) is a screening instrument for emotional and behavioral problems. The self-rated version of the SDQ is comprised of 25 items divided into five subscales of 5 items each: emotional symptoms, conduct problems, hyperactivity-inattention, peer problems, and prosocial behavior. The reliability and validity of the scale was previously validated with Japanese sample (Sugawara, Sakai, Sugiura, & Matsumoto, 2006). Each item is answered on a 3-point ordinal Likert scale - 0 (*not true*), 1 (*somewhat true*), and 2 (*certainly true*) - and subscale scores were generated by summing the scores of the relevant items (range: 0-10). Higher scores on all subscales (except prosocial behavior) indicated more difficulties. A total difficulties score was calculated by summing all scores excluding prosocial behavior (range: 0-40). The reliability coefficient of the difficulties scale scores were good at Time 1 (.72), Time 2 (.73), and Time 3 (.75).

Indicators of psychosocial functioning. The KINDL questionnaire, originally developed in Germany, is one of the most commonly used measures of adolescent QOL. The scale consists of 24 items that assess quality of life in 6 domains with 4 items each: physical health, emotional health, self-esteem, family relations, peer relations, and school functioning. A Japanese version of KINDL was developed (Matsuzaki, Nemoto, Shibata, Morita, Sato, Furusho et al., 2007) and its psychometric properties have been validated (Murohashi & Furusho, 2011). The evaluation of daily functioning is rated on a 5-point Likert format with 1 (*never*) to 5 (*always*), and subscale item responses were added to create domain scores, with higher scores indicating better functioning in the specific domain. As criterion variables, we used all the domain scores excluding emotional health as it represented a potential confound. Internal consistency calculated for physical health, self-esteem, family relations, peer relations, and school functioning were .58, .87, .65, .63, and .44 respectively for T1; .61, .79, .70, .66, and .45 for T2; and .71, .77, .70, .69, and .43 respectively for T3. The alphas for the school functioning domain were notably low but this has been reported by other studies previously (Bullinger, Brutt, Erhart, Ravens-Sieberer, & the BELLA Study Group, 2008; Lee, Chang, & Ravens-Sieberer, 2008; Murohashi & Furusho, 2011).

Data analysis: Latent Growth Curve Modelling

Latent growth curve modeling (LGCM) analysis was used to capture longitudinal trajectories of psychosocial functioning differentiated by the DFM group. The LGCM estimates growth factors (i.e., intercept and slope) from repeated measures data to explain both intra- and inter-individual variability of change in the developmental process (Byrne, 2010; Duncan & Duncan, 2004). The advantage of LGCM is that while other methods such as repeated ANOVA test variation generically using two-wave data (Suldo et al., 2011; Xiong et al., 2017), it can utilize scores assessed several points in time to enable (non)linear growth trend of the construct at both aggregate and individual levels. Other technical advantages include (i) model evaluation with fit indices, (ii) missing data not problematic, and (iii) unequal spacing of observations allowed.

In the present study, daily psychosocial functioning was collected over 3 time points. The proposed LGCM model is presented in Figure 1. The paths from latent intercept factor to the observed variables were constrained to 1, which means that the intercept values remained constant for each individual across the 3 measurement times (Byrne, 2010). In addition, the paths from the slope factor to the variables were set to 0, 1, and 2, indicating that the variable was measured at equal intervals. We analyzed multiple LGCM with varying dependent variables including physical health, self-esteem, family relations, peer relations, and school functioning. After assuring the model fit with the overall sample, multigroup analysis was conducted to examine potential DFM group differences in the trajectories across 5 daily functioning measures. SPSS version 22 and AMOS version 22 were used for the present data analyses.

RESULTS

DFM group classification

Based on the levels of SWB and PTH, students were classified into one of four mental health groups defined by the DFM. SWB scores were based on SLSS reports of global life satisfaction, and psychopathology levels were based on the difficulties score composed by SDQ subscale scores. Following from Suldo and Shaffer (2008), students who scored above the 30th percentile on SWB were classified as "high SWB," and students below this cut-off were classified as "low SWB." Likewise, students that fell above the 60th percentile on the difficulties score were classified as "high PTH" while students below this cut-off were classified as "low PTH." Subsequently, a DFM group was created based on participants' SWB and PP scores. Using the nomenclature of the literature (Suldo & Shaffer, 2008), the groups for the present study were identified as follows:

1. Complete mental health (45%: $n = 117$) demonstrated high SWB and low PTH.
2. Vulnerable (15%: $n = 38$) demonstrated low SWB and low PTH.
3. Symptomatic but content (22%: $n = 57$) demonstrated high SWB and high PTH.
4. Troubled (18%: $n = 47$) demonstrated low SWB and high PTH.

Descriptive statistics

Table 1 shows the means, standard deviations, intercorrelations, variances, and covariances of the measures of psychosocial functioning over the 3 measurement points. Self-esteem and school functioning scores were lower than the other domain scores across time. Of note, the covariances (on the diagonal of the matrix) suggest that physical health, self-esteem, and peer relations become more variable over time, indicating functional dispersal during adolescence (Willet & Sayer, 1994).

Absolute stability (consistency in a construct's absolute level when a construct is measured over time) implies the degree to which the mean level of psychosocial functioning changes over time. Overall, the mean level of the 5 functioning measures indicated a slight increase with time, with the exception of school functioning. However, only 2 differences in the means between 2 measurement points were found to be statistically significant: Self-esteem was significantly lower at Time 2 than Time 3 ($t = -2.70, p < .01$), and School functioning was higher at Time 1 relative to Time 2 ($t = 2.10, p < .05$). Relative stability (consistency of an individual's rank order within a group across time) was generally assessed using the correlations between scores of 2 time points. As indicated by the high correlations between scores at different measurement points, students appeared to retain their relative position over the years. Stability at the aggregate level does not imply stability at the individual level – as such, individual rates of stability need to be examined by GCM analyses.

LGCM analyses

Separate LGCMs were tested on 5 measures of psychosocial functioning. As is shown in the Table 2, the analyses indicated that the models showed a good fit to the data, confirming that all psychosocial functioning variables were linear. A series of multigroup analyses were then conducted on each of psychosocial functioning variables independently, indicating trajectories that varied across functional domains as well as by DFM group. The estimated linear trajectory of daily psychosocial functioning over 3 years are depicted in Figure 2.

The effect of DFM group on physical health was larger in the troubled mental health group than the remaining youth groups. The physical health of students in the troubled group improved over the years (slope = 0.57, $p < .05$), finally reaching almost the same level as of the vulnerable group by the final year, Time 3. The level of physical health of the complete mental health group remained consistent across all 3 measurement periods (slope = 0.00) and were consistently higher than all the other groups at all time points. Contrastingly, the vulnerable (slope = -0.38) and symptomatic but content (slope = -0.06) groups experienced somewhat diminished health conditions.

The trend of self-esteem trajectory was generally positive except for youth in the symptomatic but content group (slope = -0.13, n.s.). This was particularly clear in respect to the fact that the increase in the self-esteem of the vulnerable group was greater (slope = 0.78, $p < .05$) than the complete mental health and troubled groups (slope = 0.25, and slope = 0.42, n.s., respectively). Family relations significantly improved over time in the complete mental health group (slope = 0.31, $p < .05$). As family relations evaluations by other groups remained at almost the same level over time (vulnerable: slope = 0.09, symptomatic but content: slope = -0.03, troubled: slope = -0.1, all nonsignificant), the differences between

the complete mental health and other groups became larger over time. Contrastingly, the differences between groups in peer relations tended to decrease over time. The slope of the complete mental health group (-0.15 , n.s.) indicated a slightly declining trend, while peer relations in the vulnerable (slope = 0.08) and symptomatic but content groups (slope = 0.07) hardly varied over time, and the troubled group became more positive towards their perceived quality of peer relations as they grew older (slope = 0.42 , $p < .10$). Similarly, school functioning showed a decrease in group differences over time. While school functioning in the vulnerable (slope = -0.12 , n.s.) and symptomatic but content groups (slope = -0.12 , n.s.) showed a slight declining trend and the complete mental health group showed a significant decline (slope = -0.27 , $p < .05$), the vulnerable group reported more positive school functioning over time (slope = 0.44 , $p < .05$).

DISCUSSION

The present study provided an examination of the longitudinal relationships between DFM classification and measures of daily functioning (i.e., QOL) among Japanese adolescents. Alongside the longitudinal investigation of the utility of the DFM, this study has made a unique empirical contribution to the literature by analyzing the three-wave survey data of high school students. Specifically, we investigated whether DFM mental health classification (Greenspoon & Saklofske, 2001) at the first year of high school could predict different physical health, self-esteem, family relations, peer relations, and school functioning trajectories over a 3-year period. The differences observed among the four classified DFM groups daily functioning trajectories support the utility of DFM in assessing adolescent function and risk. Specifically, students with low PTH and high SWB (i.e. complete mental health) experienced optimal functioning in all indicators over time - largely consistent with previous findings (Lyons et al., 2013; Suldo et al., 2011; Xiong et al., 2017). More specifically, physical health, self-esteem, and family relations scores showed a positive growth, and in particular, family relations in this group showed a significant upward trend. This provides further evidence to indicate the essential value of both SWB and PTH in understanding student well-being.

The most notable finding for students in the vulnerable group was the fact that they showed a significant upward trend in self-esteem. On the other hand, their physical health and family relations scores converged towards the levels of the troubled group scores over time, suggesting the need for careful monitoring of the physical condition and self-concept of vulnerable students. This result indicates the benefit of the DFM, as the absence of signs of psychopathology did not fully predict adolescents' functioning longitudinally. This also arguably provided evidence indicating the significance of assessing SWB as a unique determinant that contributes to formulating an in-depth conception of individual well-being (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008). The results indicated that students classified in the symptomatic but content group daily functioning in all areas but peer relations diminished over time. Although their functioning scores ranked in the middle of all the groups across time, their conflicting status of being classified as high in both of SWB and PP may hamper their capacity to function optimally. Thus, these varying trends between the complete mental health and symptomatic but content groups confirmed another benefit of the DFM (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008). If assessments do not operationalize

both SWB and PP, problems related to physical health and family relations will likely remain undetected, placing individuals at a higher risk of encountering future problems. At the onset of the study, students classified in the troubled mental health group had the lowest scores in all indicators, and although trajectories of psychosocial functioning (with the exception of family relations) indicated upward trends, the scores remained lower relative to the other groups.

The present study found that groups of students with no psychopathology (i.e., complete mental health and vulnerable groups) tended to look at themselves in an increasingly positive light over time. Lack of psychopathology, therefore, can function as a booster of self-esteem. Additionally, students with higher SWB (i.e., complete mental health and symptomatic but content groups) were more likely to experience better physical health and family relations. In other words, in students with lower SWB, family relations remained stably low over time. The result was consistent with previous findings that indicated that groups with high SWB had significantly more parental study support (Antaramian et al., 2010).

Differences in peer relations and school functioning among DFM groups diminished over time. Japanese youth face an almost exponential increase in academic pressure during their high school years and the consequences of this transition can be serious, with high levels of teenage suicide, bullying and violence, and refusal to attend school (Okano & Tsuchiya, 1999). As such, numerous students face difficulties adjusting to the competitive school environment and therefore friendships can sometimes endure challenges. The severity of the environmental pressure diminished the group differences in the trajectory of school functioning. Rather interestingly, students in the troubled group appeared to thrive within this crisis period.

Cross-cultural similarities and differences in the distribution of participants across the DFM group were found. Consistent with previous studies, the sample size of the complete mental health group was yielded to be the largest of all the DFM groups. However, the proportion (45%) was rather smaller for the present study than previous research that reached around 60% (Antaramian et al., 2020; Kelly et al., 2012; Suldo & Shaffer, 2008; Suldo et al., 2016; Xiong et al., 2017). In contrast, the percentage of the troubled group (18%) for the present study was comparable to that of other studies targeted at middle adolescence (19.9% for Lyons et al., 2012; 17% for Suldo et al., 2011; 15% for Suldo et al., 2016). The unique finding of the present study lies in the fairly larger proportion of the symptomatic but content group: 22% of the students fell in this classification for the study, whereas the rate hovered around 10% in other studies (8.8% for Lyons et al., 2012; 12% for Suldo et al., 2011; 11.4% for Suldo et al., 2016; 10.1 % for Xiong et al., 2017). Coupled with larger percentage of the vulnerable group (25%), the present study tended to classify more students as less than optimal status than did previous studies. The differences might be related to different psychometric instruments and classification criteria, and yet sociocultural influences might be attributable to the distribution of the DFM group. People in individualistic cultures have a tendency to report higher SWB than do those in collectivistic cultures (Diener, Oishi, & Lucas, 2003), possibly due to a different conception of the self: independent versus interdependent (Markus & Kitayama, 1991). The large proportions of the vulnerable and symptomatic but content groups in the present study clearly demonstrate the need to apply a comprehensive assessment framework proposed by the DFM for Japanese youth.

There were several limitations in this study that should be noted. This research utilized the extant database and thus variables selected for verifying the model were rather arbitrary. Future studies should test an even more comprehensive model of antecedents and outcomes derived both from self-report and parent or teacher evaluations. In addition, the small sample size of vulnerable and symptomatic but content groups, in particular, limited our ability to draw reliable trajectories of daily psychosocial functioning. Furthermore, the reliability coefficients of some of the outcome variables such as school functioning were low and thus other measures for similar constructs need to be used to verify the present findings.

Implications

Despite these limitations, this study made contributions to the empirical literature on adolescent mental health by employing a Japanese sample, thus expanding the model's external validity. The classification in the present study yielded a unique distribution of the 4 groups. More than half of the sample were in less-than-optimal state or not truly healthy. Specifically, there were quite a number of students who were otherwise overlooked by the traditional psychopathological model. Therefore, employing the SWB measure is necessary to screen the vulnerable youth and monitor their level of positive mental health. Alleviating PTH while maintaining SWB are needed for the symptomatic but content youth, and reassuring their sense of self-worth and providing opportunities of positive experience could lead to increased well-being. Imminent and intensive interventions are most necessary for the troubled youth. Assessment methodologies that combine positive and negative indicators of mental health could assist in the development of an effective intervention program specifically targeted at youth at risk.

CONCLUSIONS

By adopting the DFM of mental health, the present study identified differential trajectories of daily psychosocial functioning in Japanese adolescents. Youth in the troubled group clearly require intervention, but without the DFM of mental health framework, the needs of the vulnerable and symptomatic but content groups may often be overlooked. In addition, this study provides supporting evidence of the existence and value of the DFM of mental health, by revealing longitudinal effects within the model. Indeed, the present study highlighted the importance of utilizing comprehensive assessment framework to better identify youth at-risk. The goal of public mental health is to carve out effective prevention and intervention programs through which at least 60% of the young population can benefit to achieve optimal well-being (Keyes, 2009). Falling well behind the goal, practitioners in Japan should start complete and nuanced assessment of adolescent mental health (Lyons et al., 2012) by utilizing the DFM assessment approach, which will lead to effective measures to address problems for specific group of students and promote their optimal well-being.

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Table 1. Longitudinal psychosocial functioning descriptive statistics

	Physical health			Self-esteem		
	T1	T2	T3	T1	T2	T3
T1	1.00 (8.54)			1.00 (13.31)		
T2	.49 (3.99)	1.00 (7.84)		.57 (7.10)	1.00 (11.49)	
T3	.35 (3.29)	.46 (4.21)	1.00 (10.46)	.51 (7.21)	.61 (7.90)	1.00 (14.75)
M	13.85	13.69	13.91	9.08	9.15	9.70
SD	2.92	2.80	3.24	3.65	3.39	3.84
	Family relations			Peer relations		
	T1	T2	T3	T1	T2	T3
T1	1.00 (9.09)			1.00 (8.56)		
T2	.53 (4.79)	1.00 (8.93)		.52 (7.10)	1.00 (7.82)	
T3	.48 (4.33)	.68 (6.05)	1.00 (8.87)	.49 (7.21)	.50 (7.90)	1.00 (9.44)
M	15.26	15.23	15.46	15.03	15.11	15.05
SD	3.01	2.99	2.98	2.93	2.80	3.07
	School functioning					
	T1	T2	T3			
T1	1.00 (7.67)					
T2	.47 (3.37)	1.00 (6.79)				
T3	.44 (3.11)	.53 (3.50)	1.00 (6.37)			
M	11.10	10.74	10.93			
SD	2.76	2.60	2.52			

Note. All correlations are significant at the $p < .01$. (Co)variances are represented in the parentheses.

Table 2. Latent growth curve modelling fit indices

Functional Domain	Chi-square	df	<i>p</i>	CFI	RMSEA
Physical health	10.169	5	.071	.975	.045
Self-esteem	8.095	5	.151	.993	.035
Family relations	3.051	5	.692	1.000	.000
Peer relations	10.956	5	.052	.981	.048
School functioning	9.895	5	.078	.982	.044

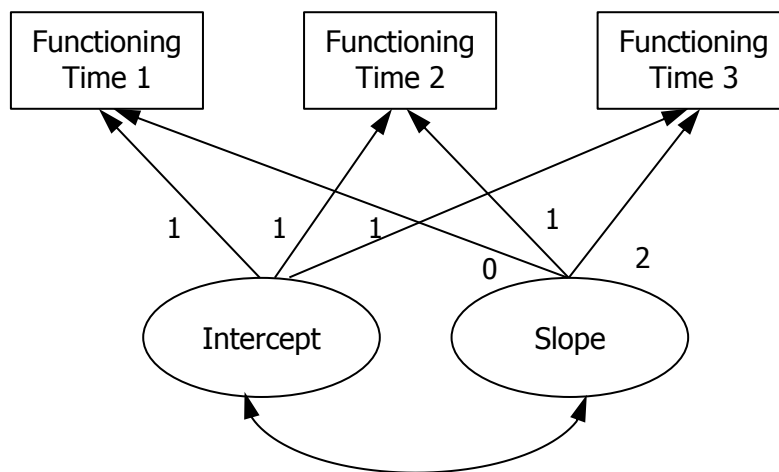


Figure 1. Latent Growth Curve Modelling

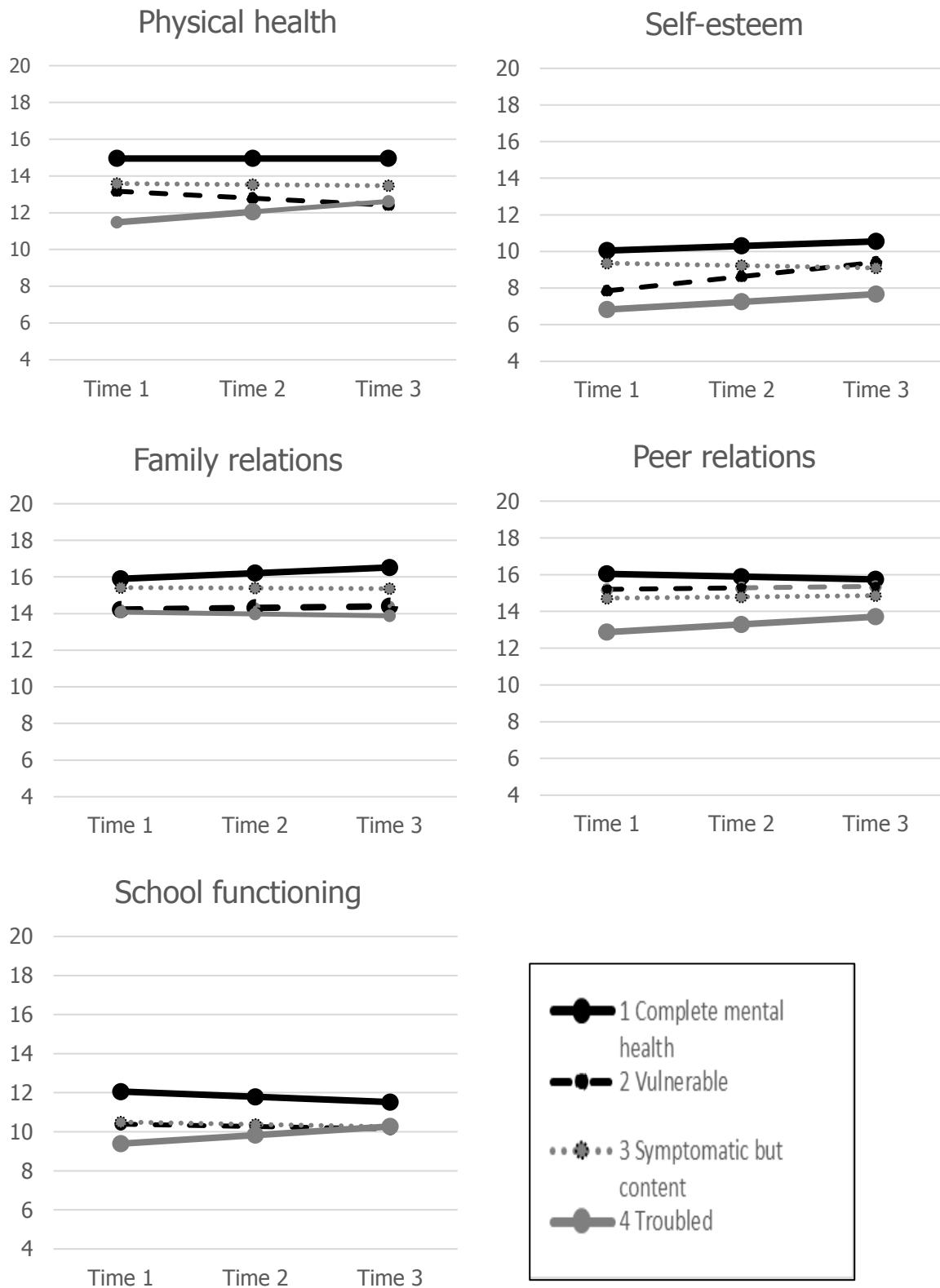


Figure 2. Estimated variations in longitudinal psychosocial functioning by DFM group

THE EFFECT OF TYPE A BEHAVIOR PATTERN ON DREAMING AMONG JAPANESE UNIVERSITY STUDENTS

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ABSTRACT

Type A behavior pattern (TABP) is characterized by a sense of time urgency, aggressiveness, and excessive striving for competitive achievement. TABP is strongly related to the onset and recurrence of coronary heart disease (CHD). Many studies investigated the relation between TABP and sleep problems, but few studies investigated on Japanese samples. The purpose of this study was to clarify if emotional and cognitive features of TABP can affect dreaming analysed by dream theme, dream sensory modality and dream emotion. Japanese TABP Scale and Dream Recall Frequency Questionnaire -Japanese version were administered to 309 Japanese undergraduates (131 male, 177 female, 1 missing). The main effect of TABP was significant on both "anger", "sadness", "fear", "tension", and "anxiety" of dream emotion and "being chased or pursued", "Falling", and "nightmare with/without sudden arousal" of dream theme. Type As experienced higher level of negative emotions on dreaming. Additionally, type As recalled more nightmare and felt more nightmare distress from analysis of dream theme. Type As experienced higher level of pre-sleep negative emotion on general. These results suggested that the continuity hypothesis is existing among waking emotion, pre-sleep emotion and dreaming emotion.

Keyword: type A behavior pattern, dreaming, dream emotion, dream cognition

BACKGROUND AND PURPOSE

Type A behavior pattern (TABP) is characterized by a sense of time urgency, aggressiveness, and excessive striving for competitive achievement (Friedman & Rosenman, 1974). TABP is strongly related to the onset and recurrence of coronary heart disease (CHD) (Oishi, Kamimura, Nigorikawa, Nakamiya, Williams, & Horvath, 1999; Ohmi, Kato, & Meadows, 2016). Many studies investigated the relation between TABP and dreaming (Hicks, Chancellor, & Clark, 1987; Nesca, & Koulack, 1991; Tan, & Hicks, 1995), but few studies investigated on Japanese samples. The purpose of this study was to clarify if emotional and cognitive features of TABP can affect dreaming and nightmare analysed by dream theme, dream sensory modality and emotion.

METHOD

Participants

309 Japanese undergraduates (131 male, 177 female, 1 missing) from the private university in Kanto region participated in the survey. The data of 2 participants were excluded due to taking sleep medication. The remaining data of 307 participants were analysed (effective response rate 99.3%)

Measures

The Questionnaire survey was consisted of Japanese Type A Behavior Scale (Seto, Hasegawa, Sakano, & Agari, 1997) and Dream Recall Frequency Questionnaire -Japanese version about Typical theme, Sensory modality and Emotion (Okada, Matsuoka, & Hatakeyama, 2005). Japanese TAB Scale consisted of 30 items in total, 10 items for each of the three factors of aggression, perfectionism, and Japanese workaholic. As for Japanese Type A Behavior Scale, Higher scores indicate a higher degree of Type A tendency. TABP male and female cut-offs are: Type A = 120 points, Type X = 92 to 119 points, and Type B = less than 92 points for male, Type A = 118 points, Type X = 88 to 117 points, and Type B = less than 88 points for female.

On the other hand, for Dream Recall Frequency Questionnaire, lower scores indicate a higher degree of dream recall frequency. This questionnaire was consisted of (i) dream recall frequency of specific theme, (ii) sensory modality experience, and (iii) emotional experience by self-rating.

Ethical consideration

The answers are provided anonymously. All the answers would be quantified to protect personal information. Before answering, informed consent was obtained from all participants. This study was approved by the ethics committee of Toyo University.

RESULTS

Descriptive statistics

There was no gender difference on dream recall frequency regarding the specific theme. The frequency of experiencing dreams, "vision", "color", and "hearing" were more frequent for females than for males, but there were no gender differences in other dream sensory modalities. In terms of the frequency of dream emotion, only "sadness" was more frequent in females than in males, but there was no gender difference in other dream emotions (Table 1).

Table1 Descriptive Statistics and Gender Difference in Dream Variables.

	total (n=307)		male (n=131)		female (n=176)		t-value
	M	SD	M	SD	M	SD	
TypeA total	92.556	18.795	90.821	18.389	93.812	19.038	-1.346 <i>n.s.</i>
F1 Hostile behavior	25.957	9.370	25.712	9.922	26.132	8.978	-.382 <i>n.s.</i>
F2 Perfectionism	33.663	8.856	33.528	9.031	33.762	8.751	-.224 <i>n.s.</i>
F3 Japanese-style workaholic	33.040	9.130	31.912	8.634	33.841	9.409	-1.813 †
Flying or soaring through the air	6.251	.791	6.221	.816	6.273	.774	-.562 <i>n.s.</i>
Falling	5.948	.850	6.038	.872	5.881	.830	1.610 <i>n.s.</i>
Being chased or pursued	5.733	.933	5.824	.890	5.665	.960	1.487 <i>n.s.</i>
Nightmare with sudden arousal	6.059	.836	6.046	.821	6.069	.848	-.236 <i>n.s.</i>
Nightmare without sudden arousal	5.791	.917	5.885	.903	5.722	.924	1.540 <i>n.s.</i>
Lucid dream	5.590	1.242	5.588	1.270	5.591	1.225	-.022 <i>n.s.</i>
Dream recall frequency	3.935	1.427	4.084	1.463	3.824	1.393	1.584 <i>n.s.</i>
Dream vividness	2.186	.823	2.290	.799	2.109	.834	1.918 †
Vision	1.892	1.118	2.123	1.270	1.722	.960	3.149 **
Color	1.765	1.178	2.015	1.347	1.580	1.000	3.250 ***
Hearing	1.958	1.221	2.146	1.336	1.818	1.111	2.340 *
Speaking	2.367	1.296	2.442	1.304	2.313	1.291	.861 <i>n.s.</i>
Cutaneous	3.149	1.379	3.124	1.447	3.167	1.330	-.266 <i>n.s.</i>
Movement	1.764	1.078	1.891	1.161	1.670	1.005	1.776 †
Taste	4.102	1.172	4.093	1.228	4.108	1.134	-.110 <i>n.s.</i>
Smell	4.210	1.104	4.287	1.140	4.153	1.077	1.043 <i>n.s.</i>
Visceral sensation	3.650	1.296	3.641	1.373	3.657	1.240	-.109 <i>n.s.</i>
pain	3.859	1.249	3.752	1.329	3.937	1.185	-1.279 <i>n.s.</i>
temperature	3.928	1.195	3.930	1.251	3.926	1.156	.030 <i>n.s.</i>
Joy	2.770	1.285	2.798	1.444	2.750	1.159	.325 <i>n.s.</i>
Hope	3.489	1.480	3.504	1.562	3.477	1.422	.155 <i>n.s.</i>
Happiness	3.325	1.401	3.364	1.505	3.295	1.324	.424 <i>n.s.</i>
Anger	3.970	1.440	3.984	1.510	3.960	1.391	.145 <i>n.s.</i>
Sadness	3.534	1.400	3.744	1.486	3.381	1.317	2.255 *
Fear	3.243	1.323	3.326	1.341	3.183	1.309	.930 <i>n.s.</i>
Tense feeling	3.662	1.476	3.620	1.496	3.693	1.465	-.426 <i>n.s.</i>
Anxiety	3.380	1.446	3.535	1.500	3.267	1.399	1.602 <i>n.s.</i>
Surprise	3.764	1.427	3.860	1.514	3.693	1.359	1.011 <i>n.s.</i>
Shame	4.531	1.305	4.535	1.403	4.528	1.233	.043 <i>n.s.</i>

Note: Lower scores indicate a higher degree of dream recall frequency.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Examinations of TABP effect in each dream recall

A one-way analysis of variance was performed on the score of each dream recall. Main results showed: (i) Regarding the specific theme of dreams, the main effects of TABP's group are significant in "being chased or pursued", "Flying or soaring through the air, "lucid dream (I am dreaming now and I noticed in my dreams) " was a significant positive trend. As a result of multiple comparisons, the type A group tended to recall more than the type X and type B groups (Table 2). (ii) There were no main effects of the group on dream sensory modalities (Table 2). (iii) Regarding the frequency of experience according to dream emotion, the main effect of TABP was significant on "anger", "sadness", "fear", "tension", and "anxiety" of dream emotion. Type As recalled more emotionally than type Xs and Type Bs (Table 2).

Table2 Comparison of Dream Variables by TypeA Behavior Pattern.

Dream Recall Frequency	Total (n=293)		TypeA (n=20)		TypeX (n=151)		TypeB (n=122)		F-value	
	M	SD	M	SD	M	SD	M	SD		
Flying or soaring through the air	6.266	.757	5.90	.912	6.298	.755	6.287	.721	2.547 †	A<B, X
Falling	5.942	.852	5.70	.801	5.947	.855	5.975	.857	.902 n.s.	—
Being chased or pursued	5.730	.936	5.25	1.118	5.722	.932	5.820	.891	3.246 *	A<X, B
Nightmare with sudden arousal	6.068	.843	5.80	.894	6.047	.870	6.139	.796	1.502 n.s.	—
Nightmare without sudden arousal	5.788	.917	5.50	1.147	5.748	.873	5.884	.924	1.804 n.s.	—
Lucid dream	5.580	1.260	4.95	1.276	5.596	1.190	5.664	1.321	2.819 †	A<X, B
Dream recall frequency	3.932	1.439	3.40	1.273	3.874	1.425	4.090	1.466	2.245 n.s.	—
Dream vividness	2.182	.828	2.30	.923	2.067	.739	2.303	.899	3.010 *	X<B
Vision	1.901	1.132	1.90	1.119	1.848	1.106	1.967	1.171	.375 n.s.	—
Color	1.765	1.195	1.80	1.152	1.675	1.117	1.869	1.292	.893 n.s.	—
Hearing	1.959	1.230	2.35	1.565	1.854	1.151	2.025	1.256	1.741 n.s.	—
Speaking	2.375	1.299	2.50	1.051	2.417	1.298	2.303	1.342	.357 n.s.	—
Cutaneous	3.144	1.382	2.90	1.518	3.040	1.310	3.314	1.438	1.660 n.s.	—
Movement	1.782	1.089	1.95	.999	1.748	1.066	1.795	1.135	.318 n.s.	—
Taste	4.089	1.185	3.85	1.424	4.093	1.151	4.123	1.189	456 n.s.	—
Smell	4.201	1.112	3.75	1.517	4.185	1.048	4.295	1.104	2.112 n.s.	—
Visceral sensation	3.667	1.293	3.45	1.504	3.624	1.216	3.754	1.350	.639 n.s.	—
pain	3.856	1.254	3.55	1.432	3.900	1.208	3.852	1.284	.686 n.s.	—
temperature	3.918	1.202	3.45	1.432	3.980	1.092	3.918	1.283	1.726 n.s.	—
Joy	2.795	1.290	2.70	1.129	2.801	1.244	2.803	1.377	.058 n.s.	—
Hope	3.515	1.473	3.60	1.429	3.437	1.374	3.598	1.599	.438 n.s.	—
Happiness	3.334	1.396	3.30	1.129	3.291	1.340	3.393	1.508	.186 n.s.	—
Anger	3.952	1.442	3.45	1.317	3.808	1.427	4.213	1.444	4.047 *	A, X<B
Sadness	3.539	1.396	2.80	1.196	3.609	1.386	3.574	1.414	3.076 *	A<B, X
Fear	3.257	1.316	2.30	.923	3.187	1.201	3.500	1.427	7.948 ***	A<X, B
Tense feeling	3.689	1.467	2.75	1.372	3.675	1.403	3.861	1.512	5.074 **	A<X, B
Anxiety	3.386	1.445	2.15	.933	3.397	1.386	3.574	1.493	8.801 ***	A<X, B
Surprise	3.747	1.409	3.40	1.429	3.603	1.352	3.984	1.449	3.168 *	X<B
Shame	4.529	1.307	4.40	1.392	4.483	1.221	4.607	1.400	.402 n.s.	—

Note: Lower scores indicate a higher degree of dream recall frequency.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

To assess of the effects of sub-factors of TABP (hostile behavior, perfectionism, Japanese-style workaholics) on the score of each dream recall, a multiple regression analysis was performed.

The explanation rate of the TABP sub-factors was significant for the specific theme of dreams, "falling", "being chased or pursued", "Nightmare with sudden arousal", "Nightmare without sudden arousal", "Temperature sense", "anger", "sadness", "fear", "anxiety". As a result of multiple regression analysis, the most influential sub-factor was "hostile behavior", and "Japanese workerholic" (Table 3).

Table3 Multiple Regression Analysis for Dream Variables by Subscales of TypeA Behavior Pattern.

Dream Recall Frequency	R ²	F-value	F1 Hostile behavior			F2 Perfectionism		F3 Japanese-style
			β	β	β	β	workaholic	
Flying or soaring through the air	.010	1.948	<i>n. s.</i>	-.069	<i>n. s.</i>	.097	<i>n. s.</i>	-.146 *
Falling	.019	2.841	*	-.137 *		.136 *		-.127 *
Being chased or pursued	.047	5.851	**	-.128 *		.104	<i>n. s.</i>	-.244 ***
Nightmare with sudden arousal	.020	3.018	*	-.165 **		.029	<i>n. s.</i>	-.089 <i>n. s.</i>
Nightmare without sudden arousal	.026	3.582	*	-.100 †		.045	<i>n. s.</i>	-.185 **
Lucid dream	.002	1.159	<i>n. s.</i>	-.039	<i>n. s.</i>	-.040	<i>n. s.</i>	-.075 <i>n. s.</i>
Dream recall frequency	.006	1.596	<i>n. s.</i>	-.067	<i>n. s.</i>	.020	<i>n. s.</i>	-.121 †
Dream vividness	.001	1.132	<i>n. s.</i>	-.021	<i>n. s.</i>	-.109	<i>n. s.</i>	.046 <i>n. s.</i>
Vision	-.004	.619	<i>n. s.</i>	-.023	<i>n. s.</i>	.036	<i>n. s.</i>	-.088 <i>n. s.</i>
Color	.007	1.719	<i>n. s.</i>	-.038	<i>n. s.</i>	.034	<i>n. s.</i>	-.140 *
Hearing	.005	1.470	<i>n. s.</i>	-.041	<i>n. s.</i>	.124	†	-.109 †
Speaking	-.004	.590	<i>n. s.</i>	-.071	<i>n. s.</i>	.057	<i>n. s.</i>	.000 <i>n. s.</i>
Cutaneous	.005	1.491	<i>n. s.</i>	-.078	<i>n. s.</i>	.049	<i>n. s.</i>	-.119 †
Movement	-.009	.163	<i>n. s.</i>	-.029	<i>n. s.</i>	.042	<i>n. s.</i>	-.014 <i>n. s.</i>
Taste	.004	1.392	<i>n. s.</i>	-.113	†	.094	<i>n. s.</i>	-.039 <i>n. s.</i>
Smell	.009	1.922	<i>n. s.</i>	-.138 *		.031	<i>n. s.</i>	-.062 <i>n. s.</i>
Visceral sensation	.000	.981	<i>n. s.</i>	-.084	<i>n. s.</i>	.073	<i>n. s.</i>	-.077 <i>n. s.</i>
pain	.003	1.290	<i>n. s.</i>	-.119	†	.028	<i>n. s.</i>	.002 <i>n. s.</i>
temperature	.021	3.055	*	-.176 **		.107	<i>n. s.</i>	-.026 <i>n. s.</i>
Joy	-.007	.300	<i>n. s.</i>	-.002	<i>n. s.</i>	-.051	<i>n. s.</i>	.050 <i>n. s.</i>
Hope	-.009	.102	<i>n. s.</i>	-.019	<i>n. s.</i>	-.018	<i>n. s.</i>	-.009 <i>n. s.</i>
Happiness	-.007	.287	<i>n. s.</i>	.010	<i>n. s.</i>	-.051	<i>n. s.</i>	-.010 <i>n. s.</i>
Anger	.062	7.453	***	-.202 ***		-.111	†	-.053 <i>n. s.</i>
Sadness	.007	1.682	<i>n. s.</i>	-.118	†	-.006	<i>n. s.</i>	-.055 <i>n. s.</i>
Fear	.057	6.917	***	-.189 **		-.035	<i>n. s.</i>	-.156 *
Tense feeling	.056	6.782	***	-.223 ***		-.040	<i>n. s.</i>	-.089 <i>n. s.</i>
Anxiety	.030	4.016	**	-.152 *		-.033	<i>n. s.</i>	-.106 †
Surprise	.016	2.625	†	-.089	<i>n. s.</i>	-.039	<i>n. s.</i>	-.111 †
Shame	.014	2.346	†	-.146 *		.002	<i>n. s.</i>	-.057 <i>n. s.</i>

Note: Lower scores indicate a higher degree of dream recall frequency.

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

CONCLUSION

In this survey, there were few Type A people because the sample was a college student. In Japan, it has been pointed out that the number of Type A people is decreasing even among young employee (Kojima, Nagaya, Takahashi, Kawai, & Tokudome, 2004).

The data showed Type As experienced higher level of insomnia symptoms and negative emotions on dreaming. The main effect of TABP was also significant on "being chased or pursued", "Falling", and "nightmare with/without sudden arousal" of dream theme. The frequency of these themes was higher among type As than type Bs. Additionally, type As recalled more nightmare and felt more nightmare distress. This result supports the findings of both Hicks et al. (1987) and Tan & Hicks (1995). Nightmare may reflect cognitive attempt to cope with stressful situation in real life (Matsuda, 2006). Type As experienced higher level of pre-sleep negative emotion on general (Nesca, & Koulack, 1991). These results suggested that the continuity hypothesis is existing among waking emotion, pre-sleep emotion and dreaming emotion.

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EFFECTIVENESS OF THE ATTACHMENT Q SORT ON HEALTHY RELATIONSHIPS BETWEEN MOTHERS AND CHILDREN WITH DEVELOPMENTAL DISORDERS

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ABSTRACT

This study was conducted to confirm the effectiveness of the Attachment Q Sort (AQS) for assessing attachment security in children with developmental disorder. Assessment of attachment should be very important to support healthy mother-infant relationship. The Strange Situation Procedure (SSP), recognized as a traditional method of measuring attachment, may focus too much on mother-infant reunification. In this study, we utilized AQS in order to assess attachment from actions in scenes that are relatively close to nature such as home scenes. We examined the relationship between AQS and maladaptive behaviors assessed by CBCL, and the scores of ASQ in children with developmental disorders were compared to normally developing children. In this study participants were 13 normally developing children, and 3 children with developmental disorders and their mothers. Results showed that attachment security, mother-child mutual negotiation behavior, contact behavior to mother, action to approach the mother, and other people's mutual negotiation, were related to various maladaptive behaviors. Further, significant differences were found in the mother-infant mutual interacted behaviors and, the mothers' approaching behaviors. These results demonstrated that AQS can be an effective and feasible tool for assessing attachment close to nature, and, therefore, can be utilized practically in clinical settings to support children with developmental disorders.

Keyword: Attachment Q Sort, developmental disorders, SSP

INTRODUCTION

In recent years, the number of people with developmental disabilities has been increased in Japan. The Developmental Disability Support Act was enacted in 2005, and there has been growing needs in supporting children with developmental disorders. A common problem among developmental disorders is that they have difficulties in forming adequate interpersonal relationships. A possible cause is the lack of sociality seen in many of them. Difficulties they are having are characterized as developmental disorders themselves, but studies have also shown that many of them are obtained as secondary symptoms due to the relationship with their surroundings and responses. One of the major problems surrounding children with developmental disorders is parenting stress in the mothers of children with developmental disorders. Studies have shown that mothers of children with developmental disorders are more stressed than mothers of normally developing children, and those with other disabled children. It has become clear that the stress makes mother more difficult to deal with disabilities and, as a result, negative effects take place on mother-infant relationships. Therefore, it should be important to measure the attachment formed between mother and child in the assessment and to support mother-infant relationship. As a method of measuring an attachment, the Strange Situation Procedure (SSP) has been often used conventionally. However, SSP has been criticized for its lack of ecological validity. In this study, we examine the effectiveness and feasibility of the Attachment Q-Sort (AQS) method by comparing attachment security and maladapted behaviors. Also, attachment security was compared between normally developing children and children with developmental disorders.

LITERATURE REVIEW

Mothers of children with developmental disorders have a variety of anxiety and emotional conflicts because of difficulty dealing with the disabilities, and to understanding the nature of disabilities. It often appears that since child's response is low, and therefore, forming a good mother-infant relationship for themselves can be very difficult. As for mother-infant relationships, since early work done by Bowlby's (1969), attachment explained as children's emotional ties to their parents, attachment theory has become one of the major theme for researchers on the socioemotional development of young children. The growing interest of attachment theory was in large part due to the availability of a standard instrument for the assessment of infant attachment, that is SSP developed by Ainsworth and her colleagues (Ainsworth et al., 1978). However, it has been pointed out that SSP method may be too stressful for children, it may not reflect the attachment in home settings. Observation scene set in SSP may ignore the correspondence with daily activities and evaluate the attachment only by the mother-infant reunion in a specially set stress scene. AQS has been proposed as another method of measuring the attachment (Waters, & Deane, 1985). AQS consists of cards that have specific behavioral characteristics of children. The cards can be used as a standard vocabulary to describe behaviors of children in natural home setting, with special emphasis on secure-base behaviour in every day life situation. From this point of view, we examined whether the AQS was effective or not as a new assessment method of attachment in children with developmental disorders in clinical settings.

METHODOLOGY

Research Participants were 13 normally developing children (9 boys and 4 girls, average age 3.17), and 3 children suspected of having a diagnosis or developmental disorder (3 boys average age 4.81) , and their mothers. In this study, AQS was applied as the attachment measurement method, and a child the Child Behavior Checklist (CBCL) was used to assess maladaptive behaviors. AQS developed was translated into Japanese by Kondo (1993) in order to apply for Japanese children and mothers. For use of the Q-sort methodology, Q-set items describing attachment card were cut into an appropriate size, and a mother sorts the items by hand and located items into the categorized sub-tables. By comparing the resulting description with the behavioral profile of a prototypical secure child as provided by several experts in the field of attachment theory, a score for attachment security can be derived. Attachment security and its sub-scales, including mother-child mutual negotiation behavior, contact behavior to mother, action to approach the mother, other people's mutual negotiation were obtained through AQS. CBCL used in this study included dependence/separation, anxious/depressed, withdrawal/depressed, developmental problems, sleep problems, aggressive behavior, attention problems, rebellious behavior, somatic/depressed, social problems, thought problems, rule-breaking behavior, internalizing, and externalizing.

RESULT

Correlation analysis was performed to examine attachment security and its subscales and, maladapted behaviour assessed by CBCL. Results showed that various significant negative relationships were found between in subscales of CBCL and "attachment security", $r = -0.538$ to $r = -0.705$. Further, "aggressive behaviour", "attention problems", and "externalizing" were related to "mother-child mutual negotiation behavior", and "action to approach the mother", and, "rebellious behaviour" was related to "mother-child mutual negotiation behaviour", and, "internalizing" has a negative correlation with "attachment security" and "mother-child mutual negotiation behaviour", $r = -0.370$ to $r = -0.760$. However, anxious/depressed was not correlated with all items. Subsequently, the score of the attachment security was compared between the group of normally developing children and children with developmental disorders. All items except for "other people's mutual negotiation", average scores were higher in the group of normally developing children compared to the group of children with developmental disorders. A significant difference was found between these groups in "mother-child mutual negotiation", $t = 2.97$, $p < .001$, but no significant difference was found in the other items. There was a significant tendency between the groups in behaviour, $t = 2.02$, $p < .10$. However, "attachment security", "contact behavior to mother", and "other people's mutual negotiation" were found to be no differences.

DISCUSSION

In this study, we utilized AQS to measure attachment security, and examined its relations to maladaptive behavior to confirm the effectiveness of AQS in children with developmental disorders. Results showed that attachment security was related to early adaptational maladaptive behaviors. As expected, normally developing children showed higher values than children with developmental disorders in attachment. Their mean scores of normally developing children and children with developmental disorders, are 0.359 and 0.092, respectively. Thus, the difference between the two was not small. Due to the small number

of children with developmental disorder who participated in the study, the differences were not statistically significant. The reason for this may be due to the small number of children with developmental disorders. It is necessary to increase the number of participants in the developmental disorder group for further investigation. Also, since ages of children with developmental disabilities participated in this study were 2 to 5 years old, thus they were at various developmental stages. This may have influenced the results.

CONCLUSION

Results of this study clearly demonstrated negative correlations between attachment security and maladaptive behaviors in early childhood. Although differences were not statistically significant possibly due to small number of children, normally developing children scored higher in attachment security compared to children with developmental disorders. AQS was found to be an effective assessment method for attachment security. Since AQS is less intrusive than the SSP, it can be used frequently with the same child. It is important to connect these results to the assessment method in the field of clinical practice on children with developmental disorders and, supporting program should be developed based on it. It is known that a child has minimal attachment behaviors when their mothers have low responsiveness. Because of this, it is thought that mothers of children with developmental disorders may become less responsive to their children during mother-infant interaction. Attachment is to be realized by the system of action and response between mother and child. Even if a child with developmental disabilities has difficulty responding to mother, attachment may be stable if a mother can properly respond back to a child. There are some issues that should be considered in evaluating AQS as a measure for security of attachment. It was found that using mothers as assessors may not be appropriate due to possible selecting bias. Therefore, researchers should be the one to assess AQS to make more accurate assessments.

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EFFECTS OF THE STRESS COPING PROGRAMS ON SMARTPHONES FOR SPECIFIED WORKERS DISPATCHING UNDERTAKINGS: A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT

Although the number of dispatch workers in Japan has increased in recent years it cannot be said that their working environment is good. Also, since their work place is dispersed, group training is not possible. The aim of this research is to measure the effectiveness of the education provided for dealing with stress using a developed e-learning program that can be accessed with a smart phone.

The participants were made up of a total of 53 dispatch care workers between the ages of 18 to 34 who work for Dispatch Company A. They were randomly allocated to three groups: cognitive re-framing education group, job crafting education group and a control group. Intervention was performed four times on the three groups. They were given a basic survey on occupation stress and a knowledge test. The changes before and after were investigated.

An interaction between the validity of the research and the timing of the research was recognized. Regarding the stress reaction score, it was found that the score of the control group increased after intervention and the score of the cognitive re-framing group decreased. However, at the time of the follow-up, these differences between the groups were not statistically significant.

Regarding the stress reaction score, it is believed that the reduced score for the cognitive re-framing group was due to an improvement in cognitive coping ability for events related to occupational stress with the continual implementation of cognitive re-framing. Regarding the reduced score for physical complaints, it is presumed that their psychological education was effective for both.

INTRODUCTION

In recent years, the number of non-regular workers including fixed-term workers, part-time workers and dispatched workers has demonstrated an increasing tendency in Japan, and the working environment for non-regular workers cannot be regarded as better than that for regular workers.

Further, in 2015, employers were obligated to provide educational trainings and counselling to dispatched workers in order to advance their career, which created (1) a need for educational programs to support their career formation and (2) also a need to arrange environments under which they can/are allowed to maintain work conditions as good as those for regular workers. However, for example, it is difficult for dispatched workers to have an opportunity to attend a training program participated by other dispatched workers because they separately work at their own workplace. Considering such situation, the purpose of this study is to first develop an e-learning program which enables people to take part in it via their smartphone and then to measure educational effects if dispatched workers participate in this program with an aim to improve their stress management skills and career consciousness. In a simplified occupational stress survey sheet, both interventions are tentatively presumed to decrease stress factors and stress reactions while increasing peer supports. In the meantime, the cognitive restructuring method/therapy is thought to especially reduce workload factors while the job crafting method is deemed to particularly enhance resources at the workplace.

LITERATURE REVIEW

Imamura et al.(2014) developed a new internet-based computerized cognitive behavior therapy (iCBT) program in Manga format, and examined the effects of the iCBT program using a randomized controlled trial (RCT) design among workers employed in private companies in Japan. The iCBT program showed a significant intervention effect on BDI-II with small effect sizes. Karyotaki et al.(2018) investigated the effect of guided internet-based interventions for adult depression using an individual patient data meta-analysis approach. They demonstrated that a computerized cognitive behavior therapy delivered via the Internet was effective in improving depression in the general working population.

METHODOLOGY

The investigation was conducted from August, 2018 to October, 2018. The subjects were 53 young specified dispatched workers (from 18 to 34 years of age) belonging to Company A. They were randomly divided into three groups so that the groups would be even in factors such as 1) sex and 2) length of service (long, medium, and short) at the current worker dispatching company. A simplified occupational stress questionnaire, K10, and a confirmation test about the content of intervention were administered to the three groups, and investigation was conducted with them before and after the intervention as well as at the time of follow-up. Then, an analysis of variance was performed on a two factor mixing plan with the method of intervention and the time of intervention as independent variables and the scaled scores of the simplified occupational stress questionnaire, K10, and the confirmation test as dependent variables in order to examine the effect of the intervention and the differences in effect by type of intervention.

In intervention, a training program was created, and its effect was measured on smartphones. As for each intervention program, a training program based on instructional design was carried out.

(1) Cognitive Reconstruction Method Group

The cognitive reconstruction method is a technique of softening excessive stress responses by noticing and correcting distortion in cognition (or a way of thinking). This program lasts for about 30 minutes each time, and it was administered once a week, a total of four times. The content was created by assuming stress situations in which subjects would feel work stress or interpersonal stress.

(2) Job Crafting Group

Job crafting is a contrivance that workers themselves make for their work in order to increase their motivation for working. The content was created by assuming specific work situations about three points of devising a way of working, thinking about surrounding people, and devising a way of thinking about working.

(3) Control Group

Intervention was not made. However, a column article about mental health was sent to the subjects in all the groups by e-mail four times.

This study was conducted under the following scheme. 1) To provide the participants with the least possible burdening program (30 minutes each time). 2) It was planned that intervention to a participant was to be suspended if they should report a health hazard during intervention and that a person in charge of this research, a qualified clinical psychologist, would respond to the situation immediately.

RESULT

Interaction between existence or non-existence of training and the time of training was observed in "stress response." The test of the simple main effect of the time of training in each group clarified that the stress response score was significantly higher after intervention than before intervention in the control group and that it was significantly lower after intervention than before intervention in the cognitive reconstruction group. In "feeling of depression," interaction between existence or non-existence of training and the time of training was observed. The test of the simple main effect of the time of training in each group revealed that the depression score was significantly higher after intervention than before intervention in the control group. In "physical complaint" the main effect of the time of training and interaction between the existence or non-existence of training and the time of training were observed. Because of that, the test of the simple main effect of the time of training in each group showed that the physical complaint score was significantly lower after intervention than before intervention in the job crafting group and that it was significantly lower after intervention than before intervention in the cognitive reconstruction group.

Interaction was observed in the score of the confirmation test of the cognitive reconstruction method, and it was observed that in the simple main effect the score of the confirmation test of the cognitive reconstruction method was significantly higher after intervention than before intervention in the cognitive reconstruction group.

However, at the time of the follow-up, these differences between the groups were not statistically significant, and there was no significant difference observed in the score of "stress response" between the control group and the intervention groups.

DISCUSSION

The results of the analysis of variance showed that interaction was observed in the stress response score, the feeling-of-depression score, and the physical complaint score. Therefore, the hypothesis was partially supported in stress response after intervention, but it was not supported in stress factors and support by surrounding people. The hypothesis that cognitive reconstruction method lessens the burdening factors of work and that job crafting improves resources in the workplace was similarly not supported. It can be said that the intervention effect was temporary because no significant difference was found at the time of follow-up.

For the fact that cognitive reframing brought down the stress response scores, it can be considered that continuous cognitive reframing could lead to the improvement in coping skills with on-the-job stressful events. Also, considering the significant improvement in the stress response and depression scores among the control group, it is suggested that taking some measures against stress lowers stress responses.

Contrarily, in the scores of stress factors and supports from people around, the interaction of both interventions was not found, and no difference was demonstrated by both intervention means. To lower the difficulty of the program and come up with something to make the program more appealing to participants is a challenge for the future.

CONCLUSION

Regarding the stress reaction score, it is believed that the reduced score for the cognitive re-framing group was due to an improvement in cognitive coping ability for events related to occupational stress with the continual implementation of cognitive re-framing. However, it can be said that the intervention effect was temporary because no significant difference was found at the time of follow-up.

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AN EXPERIMENT OF PSYCHOLOGICAL EFFECT OF TOUCHING -MEASURING THE CHANGE OF MOOD BY TDMS-ST AT PRE AND POST APPLICATION OF TOUCHING ON SHOULDERS, SIDE OF THE BODY, AND ANKLES

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ABSTRACT

In this research, psychological effect of touching was examined by using the Two Dimensional Mood Test-Short Term (TMDS-st)[1]. Touching was administered on the back of the head and the side of the body primarily and sometimes on the ankles of experiment participants by professional practitioners of Craniosacral Biodynamics. 48 men and women were solicited as experiment participants and they were randomly and evenly divided into two groups. In the intervention group, the experiment participants received touching for 30 minutes. In the control group, the experiment participants were guided to rest for 30 minutes. TDMS-st was conducted pre and post touching intervention in the intervention group, whereas resting in the control group. Statistical significance was set at $p < .05$. TDMS-st has the following four elements; V-value(vitality), S-value(stability), P-value(positivity) and A-value (arousal). In the intervention group, statistical significance was observed in all the four elements of TDMS-st. In the control group, both S-value and P-value increased and A-value decreased with statistical significance after resting, but V-value increased with no statistical significance. Furthermore, the main effect of touching was found in V-value ($p = .005$), S-value ($p = .43$) and P-value ($p = .005$). In the intervention group, the experiment participants were possibly more relaxed than the control group, and also energized, being ready to move forward to the next activities. In the control group, the experiment participants were relaxed, but did not achieve increase of vitality.

Key words: Touching; TDMS-st; Relaxation; Vitality; Craniosacral

INTRODUCTION

Touching has both psychological and physiological effects, including reduction of anxiety, stress, and pain, and enhancement of relaxation, stress and immune system functions[2][3][4]. Miyazaki et. al. examined the effect of touching on meridian points and

reported that subjective freedom of movement of neck improved and stress indices of "Body Stress Scale" and "Simple Irritation and Anger Scale" went down with statistical significance[5]. The preceding studies reported that touching would have some effects on psychological and physical conditions of the experiment participants. In this experiment, touching was administered primarily on the back of the head and the side of the body, and sometimes on the ankles of experiment participants by professional practitioners of Craniosacral Biodynamics. The intervention group received touching for 30 minutes and the control group was asked to rest for 30 minutes. The experiment participants were randomly assigned to the intervention and the control group. TDMS-st was conducted pre and post touching/resting. The result was compared by Analysis of Variance (ANOVA).

BRIEF EXPLANATION OF CRANIOSACRAL

Dr. William Garner Sutherland (1873-1954) made an interesting findings in early 1900s. Sutherland was studying Osteopathy at that time. He looked at a human skeleton broken into pieces. He noticed that the temporal bone showed stunning similarity to that of a gill of fish. He came up with a hypothesis that cranial bones and breath are related. He conducted various experiments on himself and his family members. He came to believe that the cranial bones would move slightly, just like breathing and the movement was related to body fluid. He further conducted various experimental works in his clinical practices. Dr. Laurine Becker(1910 -1996), one of the disciples of Dr. Sutherland conducted researches, too. In 1970s and 1980s, Dr. John E. Upledger and others conducted research at the Michigan State University and found that the cranial bones were moving with a certain rhythm. Craniosacral therapy focuses on natural "breath" of cranial bones and a therapist stays with that rhythm and see that the entire body regains wholeness. In an actual session, a client is guided to lay down on a massage table on a face up position, and a therapist places his/her hands softly on the back of the head, the side of the body, etc. The techniques are not manipulative. A therapist does not give massage or move the joints or muscles of the client. In regular Craniosacral sessions, a therapist sits quietly focusing on the natural flow of the energy of the client for 45 to 60 minutes. (In this research, a session lasted for 30 minutes for the sake of time.) The preceding study reported that the pain was reduced and the relaxation and mood state was improved in the fibromyalgia patients[6][7].

PURPOSE OF THE STUDY

Craniosacral touching is very non-invasive and non-manipulative, as a therapist puts his/her hands softly on the back of the head, the side of the body and the ankles of a client. If it becomes clear that non-invasive simple touching is effective, it can be applied to a large audience. The preceding study reported that there was some reduction of pain, improvement of mood state, and enhancement of relaxation among those who have fibromyalgia[6][7]. However, no study was conducted about the mood state change among the healthy experiment participants. If it becomes clear that Craniosacral touching enhances relaxation and improve the mood state of healthy people, it can be used to improve the mood state of people in general, and contribute to the enhancement of their mental and physical health.

METHOD

4-1. The researcher in charge of the experiment

A 59 year old woman who was a licensed psychologist and a student of the doctoral study in the Health Psychology was in charge of the experiment.

4-2. Craniosacral therapists

The therapists were a man who had experience of clinical work for 3 years and a woman who had experience of clinical work for 10 years. Both of them were Biodynamics Craniosacral Practitioners. They did not desire to be co-authors of this paper. Instead, they desired to be mentioned in the Acknowledgement.

4-3. The experiment participants

The experiment participants were 48 men and women (6 Males and 18 Females, average age 47.1 ± 9.37). They were solicited by a snow ball system. Friends and acquaintance of the researcher in charge of the experiment and the therapists were recruited. In the experiment room, they were verbally interviewed if they were taking any prescription drugs. Those who were taking prescription drugs participated in the experiment, but their data were removed afterward, and not used in this research.

4-4. The touching method and the body position

An experiment participant was informed to be dressed in a comfortable and casual clothes before they came to the experiment. The two therapists were taking turns to do the experiment. But if an experiment participant preferred either a male or a female therapist, s/he was allowed to work with the therapist of a specific sex preferred by the experiment participant. S/he was asked to lay down on a massage table on a face up position. If the light was too bright, a small towel was placed on his/her eyes. To the experiment participants of the intervention group, a craniosacral therapist placed his/her hands primarily on the back of the head or the side of the body, and sometimes on the ankles. The therapist put his/her hands on a certain body parts and asked the experiment participant if this position was all right with him/her. The therapist did non-invasive and light touching for about 30 minutes. The therapist put his/her hands with a very light touch, called "5 gram touch". If the experiment participant asked the therapist to change the place to be touched, the therapist followed his/her request. It was verbally communicated to an experiment participant that if s/he would express that s/he was uncomfortable and hoped to discontinue the experiment, the experiment would be discontinued, and the data would be discarded.

The experiment participants who were assigned to the control group were told that they would not receive Craniosacral touching but asked to lay down facing up and rest for 30 minutes. A small towel was placed on their eyes if the lighting was too bright. It was verbally explained to the experiment participants that if they would feel uncomfortable, the experiment would be stopped and their data would be discarded. It was also verbally communicated that they would be able to receive one Craniosacral touching session for free of charge from one of the therapists, if they wish.

4-5. Ethical consideration

4-5-1. Privacy of the experiment participants

It was stated in the experiment recruitment document that it was under the discretion of the candidate to either agree or disagree to participate in the experiment. If they decide not to participate, there would be no penalty.

4-5-2. The method to obtain agreement of the experiment participants

The candidate read the experiment recruitment document and if s/he agrees to participate in the experiment, the outline of the experiment was verbally explained to the participant before the experiment. Once s/he signed the agreement, it was assumed that s/he officially agreed to participate in the experiment. If s/he expressed that s/he was not comfortable in the experiment, the experiment would be stopped. In that case, the data would be discarded.

The touching was a very soft, non-invasive touch and the practitioners did not move their hands to do massage or manipulate joints or muscles. It was least likely that the wellness of the experiment participants would be compromised for any reason by participating in the experiment.

The control group did not receive Craniosacral touching on the day of the experiment, but they were verbally instructed to contact the therapists if they were interested in receiving the therapy, they would receive one-thirty minute session for free of charge. The research was approved by the research ethics committee of J. F. Oberlin University (Approval number 18032).

4-5. Item being examined

TDMS-st was used pre and post of touching/resting. TDMS-st had 8 questions regarding the mood state, and an experiment participant selected one of the 6 items, including "None at all; 0", to "Very much so; 5". Then 4 values were calculated including; V-value(Vitality; -10~10), S-value(Stability; -10~10), P-value(Positivity; -20 ~20), A-value (Arousal; -20~20). TDMS-st had only 8 questions and it would measure mood state change in a short period of time[1]. TDMS-st was purchased for this experiment.

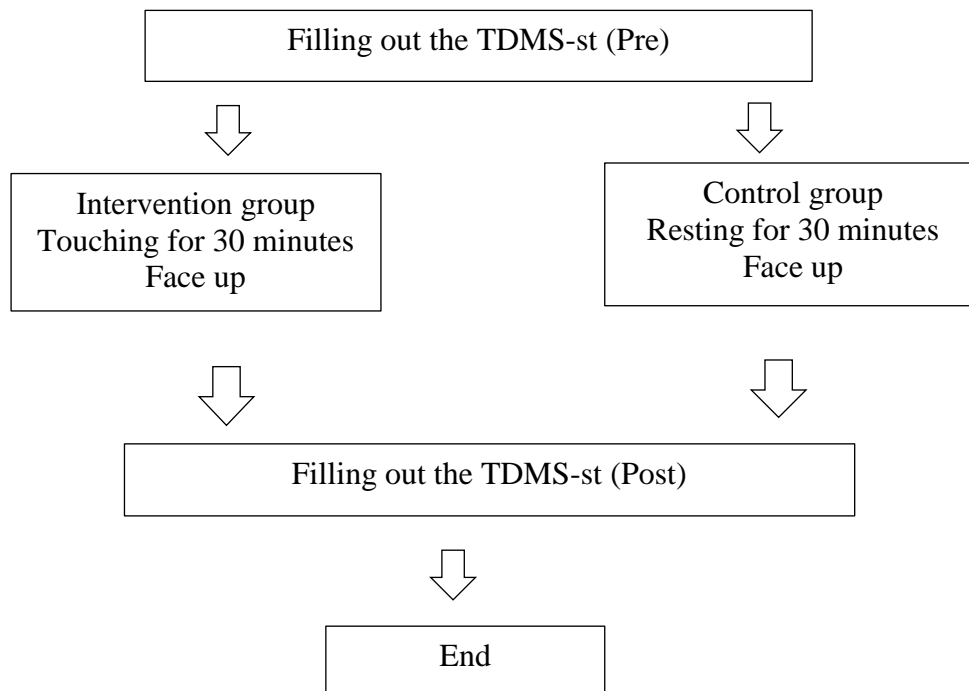
4-6. Details of experiment

4-6-1. The duration and the venue

The experiment was conducted from March to April, 2019, after the approval of the research ethics committee of J. F. Oberlin University. The venue was either a rental therapy room in Tokyo or a session room of the therapists.

4-7. Flow of experiment

Figure 1.



ANALYSIS

First, normal distribution analysis was conducted. Once the normal distribution was observed, the data were then processed by ANOVA. Once the main effect was found, multiple comparison was done by the Holm method. The statistical software used was HAD[8].

RESULT

6-1. V-value

V-Value represented "Vitality". If V-value was high, it would suggest that an experiment participant were ready for the next action. The main effect of Craniosacral touching on V-value was $p=.022^*$. There was no cross effect. A simple main effect in the intervention group was $p=.021^*$. In the control group, there was no statistical significance. There was no statistically significant difference of V-value before intervention/resting between the intervention group and the control group. Then, there was statistically significant difference of V-value after intervention/resting between the intervention group and the control group($p=.010^*$).

Table 1. Main Effect and Cross Effect of V-value

Valuables	Partial η^2	95%CI	<i>F</i>	df ₁	df ₂	<i>p</i>	
With/Without touching	.109	.001, .285	5.619	1	46	.022	*
Pre/Post	.097	---	4.923	1	46	.031	*
With/Without *Pre/Post	.028	---	1.340	1	46	.253	

p < .05*

Table 2. Result of Multiple Comparison of V-value between pre and post vs With and Without touching (Holm method)

	Difference	Standard Error	<i>d</i>	95%CI	<i>t</i>	df	<i>p</i>	Adjusted <i>p</i>	
With touching/PrePost	-1.458	0.611	-.573	-1.337, 0.190	-2.387	46	.021	.021	*
Without Touching/PrePost	-0.458	0.611	-.133	-0.690, 0.424	0.750	46	.457	<i>ns</i>	
Pre*With/Without	1.583	0.979	.890	0.114, 1.666	1.617	92	.109	<i>ns</i>	
Post*With/Without	2.583	0.979	1.071	0.473, 1.669	2.638	92	.010	.010	**

p < .01**
p < .05*

6-2. S-value

S-value represented "Stability". If S-value was high, it would suggest that an experiment participant were stable and calm. The main effect of Craniosacral touching of S-value was $p=.043^*$. There was tendency toward statistical significance concerning the cross effect ($p=.099+$). A simple main effect in the intervention group was $p=.000^{**}$. In the control group, there was also main effect observed ($p=.000^{**}$). There was no statistically significant difference of S-value before intervention/resting between the intervention group and the control group. Then, there was statistically significant difference of S-value after intervention/resting between the intervention group and the control group ($p=.010^*$). It suggested that the experiment participants of both the intervention and control group achieved stability. However, increase of stability was more significant among the experiment participant of the intervention group than those of the control group.

Table3. Main Effect and Cross Effect on S-value

Valuables	Partial η^2	95%CI	<i>F</i>	df1	df2	<i>p</i>	
With/Without touching	.086	.000, .257	4.343	1	46	.043	*
Pre/Post	.564	---	59.489	1	46	.000	**
With/Without *Pre/Post	.058	---	2.828	1	46	.099	+

$p < .01^{**}$ $p < .05^*$ $p < .10^+$

Table4. Result of Multiple Comparison of S-value between pre and post vs With and without touching (Holm method)

Multiple comparison (Holm method)	Main Effect			<i>p</i>	.000	**			
	Difference	Standard error	<i>d</i>						
With touching/PrePost	-3.375	0.508	-1.633	-2.458, 0.808	-6.643	46	.000	.000	**
Without touching/PrePost	-2.167	0.508	-.773	-1.352, 0.195	-4.265	46	.000	.000	**
Pre*With/Without	0.875	0.796	.605	-0.159, 1.370	1.100	92	.274	<i>ns</i>	
Post*With/Without	2.083	0.796	1.063	0.466, 1.660	2.619	92	.010	.010	*

$p < .01^{**}$ $p < .05^*$

6-3. P-value

P-value represented "Positivity". If P-value was high, it would suggest that an experiment participant were feeling positive. The main effect of Craniosacral touching of P-value was $p = .005^{**}$. There was tendency toward statistical significance concerning the cross effect ($p = .075^+$). A simple main effect in the intervention group was $p = .000^{**}$. In the control group, there was also main effect observed ($p = .000^{**}$). There was no statistically significant difference of P-value before intervention/resting between the intervention group and the control group. Then, there was statistically significant difference of P-value after intervention/resting between the intervention group and the control group ($p = .010^*$). It suggested that the experiment participants of both the intervention and control group achieved positivity. And increase of positivity was more significant among the experiment participant of the intervention group than those of the control group.

Table 5. Main effect and cross effect of P-value
 Multiple Comparison (Holm method)

	Partial η^2	95%CI	<i>F</i>	df1	df2	<i>p</i>	
With/without touching	.158	.015, .340	8.604	1	46	.005	**
Pre/Post	.451	---	37.771	1	46	.000	**
With/without*Pre/post	.067	---	3.311	1	46	.075	+

p<.01** *p*<.05* *p*<.10+

Table 6. Result of Multiple Comparison of P-value between pre and post vs With and without touching (Holm method)

Multiple comparison (Holm method)	Difference	Standard error	<i>d</i>	95%CI	<i>t</i>	df	<i>p</i>	Adjusted <i>p</i>	
With touching/PrePost	-3.375	0.508	-1.633	-2.458, 0.808	- - 6.643	46	.000	.000	**
Without touching/PrePost	-2.167	0.508	-.773	-1.352, 0.195	- - 4.265	46	.000	.000	**
Pre*With/Without	0.875	0.796	.605	-0.159, 1.370	1.100	92	.274	<i>ns</i>	
Post*With/Without	2.083	0.796	1.063	0.466, 1.660	2.619	92	.010	.010	*

***p*<.01 **p*<.05

6-4. A-value

A-value represented "Arousal". If A-value was low, it would suggest that an experiment participant were less aroused. There was no main effect of Craniosacral touching observed concerning A-value. There was also no cross effect observed. A simple main effect in the intervention group was *p*=.011*. In the control group, there was also simple main effect observed (*p*=.023*). There was no statistically significant difference of A-value before intervention/resting between the intervention group and the control group. Then, there was also no statistically significant difference of A-value after intervention/resting between the intervention group and the control group. It suggested that the experiment participants of both the intervention and the control group were less aroused after intervention/resting. There was no statistically significant difference of decrease level of arousal between the intervention and the control group.

Table 7. Main effect and cross effect of A-value
Multiple Comparison (Holm method)

Valuables	Partial η^2	95%CI	<i>F</i>	df1	df2	<i>p</i>	
With/Without touching	.007	.000, .117	0.339	1	46	.563	
Pre/Post	.214	---	12.489	1	46	.001	**
With/Without *Pre/Post	.001	---	0.041	1	46	.840	

***p*<.01

Table 8. Result of Multiple Comparison of A-value between pre and post vs With and without touching (Holm method)

Multiple comparison (Holm method)	Difference	Standard error	<i>d</i>	95%CI	<i>t</i>	df	<i>p</i>	Adjusted <i>p</i>	
With touching/PrePost	1.917	0.725	.637	-0.128, 1.403	2.643	46	.011	.011	*
Without touching/PrePost	1.708	0.725	.419	-0.144, 0.982	2.355	46	.023	.023	*
Pre*With/Without	0.708	1.158	.337	-0.421, 1.094	0.612	92	.542	<i>ns</i>	
Post*With/Without	0.500	1.158	.175	-0.382, 0.733	0.432	92	.667	<i>ns</i>	

***p*<.01

DISCUSSION

In this experiment, the main effect of touching was observed; V-value ($p=.005$), S-value ($p=.43$) and P-value ($p=.005$). In the intervention group, A-value decreased and V-value, P-value and S-Value increased with statistical significance. Before the experiment, V-value was expected to decrease, as the relaxation state would be increased. However, in the intervention group, V-value increased with statistical significance. It can be said that the experiment participants felt relaxed and also felt energized after receiving Craniosacral touching for 30 minutes. In the control group, A-value decreased, and P-value and S-Value increased with statistical significance. However, V-value did not show any statistical significance. The experiment participants in the control group were relaxed by resting lying on a massage table facing up. However, possibly, they did not feel being energized.

CONCLUSION

In conclusion, it can be said that the experiment participants possibly felt relaxed, stable, and energized by receiving Craniosacral touching at statistically significant level. Being relaxed yet energized is an ideal state for people in general to have healthful life being ready for the next activity. The control group which rested for the same period of time did not achieve such state. In this experiment, Craniosacral touching on the back of the head, the side of the body and on the ankles possibly enhanced relaxation and vitality among the experiment participants so that they felt relaxed, positive and energized.

LIMITATIONS AND FUTURE PERSPECTIVE

In this experiment, 48 participants were examined. In the future, the number of experiment participants shall be increased to obtain even more reliable statistical analysis. In this experiment, only the mood scale was examined using TDMS-st. In the future, it will be necessary to examine more of psychological indices, and some physiological indices such as blood pressure, heart rate, Respiratory Sinus Arrhythmia and blood hormone level. It will also be meaningful to give an open ended question to examine the psychological state. Age shall be controlled in the future. In the experiment, the age varied from the 20s to the 70s. In the future, the experiment participants shall be divided into several age groups to be more exact on the influence of age. In this research, there were more women than men. In the future, it would be necessary to have the same number of male and female participants.

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ADVOCATING QUALITATIVE APPROACHES, A CASE STUDY OF A HIGHER EDUCATION DEAN IN UNIVERSITI MALAYSIA SABAH

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Nur Farhana Ardillah Binti Aftar

INTRODUCTION

Qualitative research is a research approach for exploring and understanding the meaning individuals or grouped ascribe to a specific phenomenon (Creswell, 2014). Qualitative research also provides the platform to study a real-world setting, discover how people cope and thrive in that setting, and capture the contextual richness of human experiences (Yin, 2011). Qualitative data are a source of well grounded, rich description, and thorough explanations of processes in a local settings (Miles & Huberman, 1994). Such approach is emulated in a study by Abela, McIntyre-Smith and Dechef (2003) where a qualitative narrative design was used to assess the life stress of their participants. This is in an effort, according to the authors, to more completely capture the meaning that the individual assign to occurring incidents.

WORLD RENOWNED INTERVIEW TECHNIQUES OF PATTON (2002)

Patton (2002) is a world famous interview expert and famously produced the *Qualitative Research & Evaluation Methods* (3rd ed.) textbook. In this textbook, Patton can be seen training interviewers, correcting errors in transcripts of interviews conducted by experienced and well-known field researchers, and retrieving interviews from rural area folks whom refused to cooperate for interviews. In this textbook, Patton made mentioned of 3 basic approaches to collecting qualitative data. They are the informal conversational interview, the general interview guide approach, and the standardized open-ended interview. Patton (2002) entailed that the information conversational interview relies entirely on the spontaneous generation of questions in the natural flow of an interaction, as is often a part of ongoing participation observation fieldwork. In this format, the author described on how the person being interviewed may not even realize they is being interviewed. The second approach to interviewing is the general interview guide, which involves outlining a set of issues that are to be explored with each respondent before interviewing begins (Patton, 2002). The author described on how the guide serves as just a basic checklist during the interview to make sure that all relevant topics are covered. The author added

theses are not word for word guidelines but rather just a topic term used as a guide. In contrast, Patton (2002) mentioned on the third interview technique of a standardized open-ended interview which consists of a set of question carefully worded and arranged with the intention of taking each respondent through the same sequence and asking the same questions with the exact same words. The author affirmed how the standardized open-ended interview is used when it is important to minimize variation in the question posed to interviewees. Due to the nature of this current case study which investigates the phenomenon of organizational stressor uniquely experienced by higher education deans, the third interview technique of standardized open-ended interview will be used.

METHODOLOGY

Participants

Qualitative research uses non-probability samples for selecting the population for study (Ritchie, & Lewis, 2003). In this method of selecting respondent, unit are deliberately selected to reflect particular features or groups within the sampled population. The authors point out that such sample is not intended to be statistically representative but instead the characteristic of the population are used as the basis of selection. There are a range of different approaches to purposive sampling, designed to yield different types of sample composition and this depends of the study's aim and coverage. A homogenous sample will be selected to give a detailed picture of a particular phenomenon (Patton, 2002).

To examine which interview technique was most effective for higher education deans, a dean of a Malaysian public university was approached.

Data Analysis

The Atlas.ti qualitative data analysis software was used throughout the data analysis stages of the current study. Atlas.ti is a powerful workbench for the qualitative analysis of large bodies of textual, graphical, audio, and video data, and offers a variety of tools for accomplishing the tasks associated with any systematic approach to unstructured data, i. e., data that cannot be meaningfully analyzed by formal, statistical approaches (Friese, 2013). Through the Atlas.ti User Guide and Reference Manual, Friese (2013) explained how Atlas.ti can helps qualitative researcher to explore the complex phenomena hidden in qualitative data. The author also

highlighted how Atlas.ti can help qualitative researcher cope with the inherent complexity of the tasks and data, by offering a powerful and intuitive environment that keeps the researcher focused on the analyzed materials. ATLAS.ti is fundamentally a concept database where the qualitative researcher creates concepts, or "codes", to be used for conceptualizing chunks of data, organize and relate these concepts in ways that support your analysis (Woolf, 2007). The great strength of ATLAS.ti is that it does not provide pre-determined ways to do this, so every analysis must be designed uniquely according to its needs (Woolf, 2007).

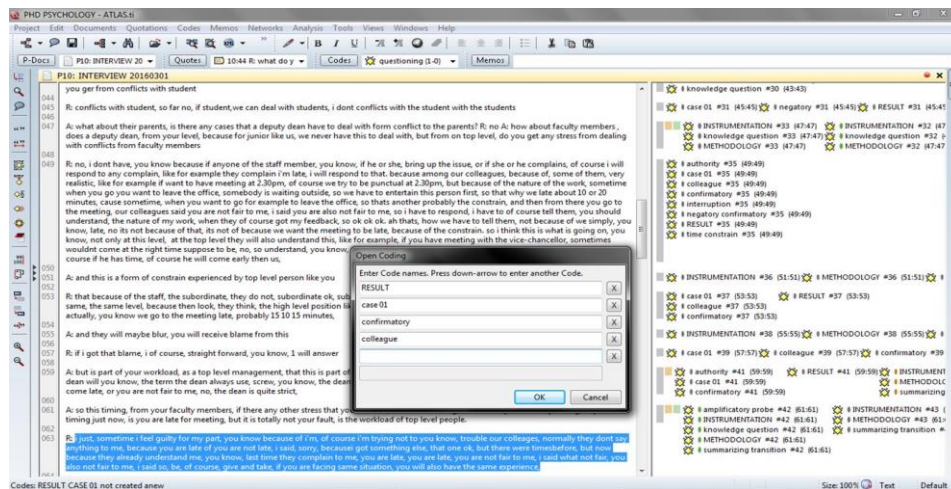


Figure 01 :Atlas.ti Qualitative Data Analysis Software Ver 7.5.7

FINDINGS

DEAN 20160316

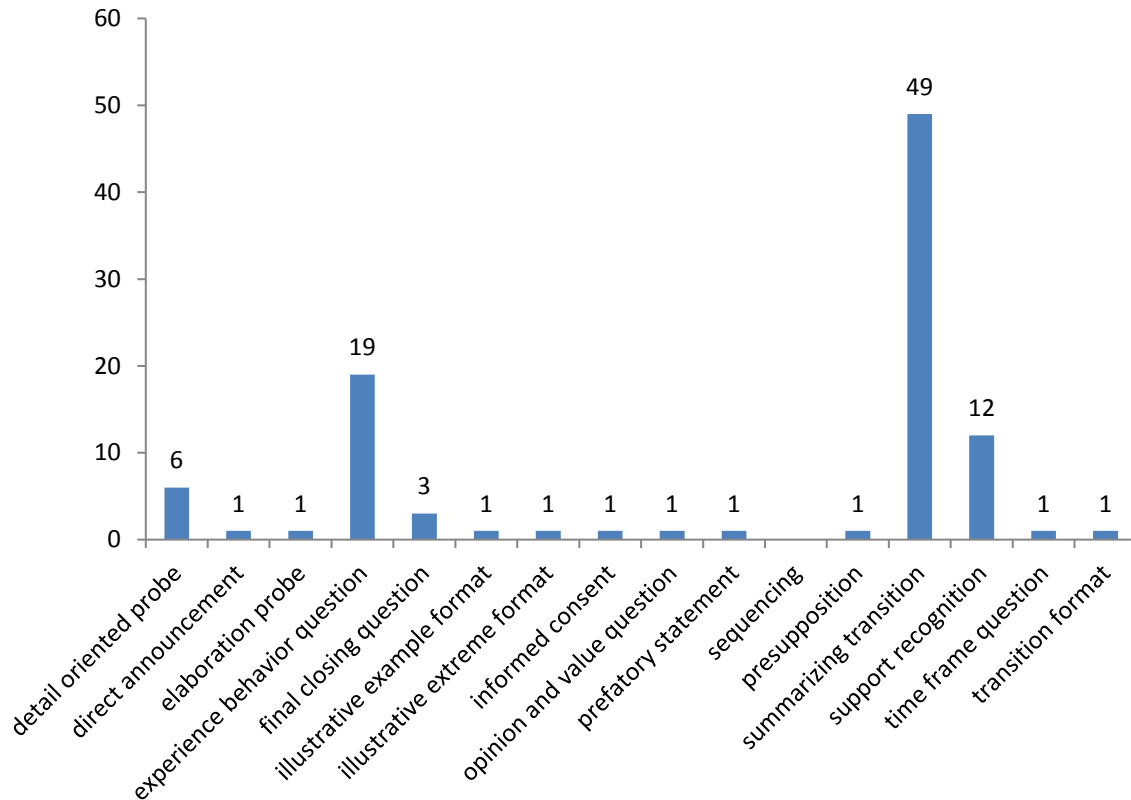


Figure 02: Applied Interview Techniques (Patton,2002) on DEAN 20160316

The above graph depicts 15 interview techniques of Patton (2002) used by the researcher in interviewing DEAN 20160316. These 15 interview techniques elicited DEAN 20160316 to respond with a total of 9,086 words. Certain interview techniques were found to elicit more responses and thus these techniques were used more often. However, certain interview techniques were found to diminish verbal responses and were used sparingly. The interview technique used the most with DEAN 20160316 was the technique of summarizing transition, which was used at a total of 49 times. This indicated that this technique was most effective in eliciting verbal response from DEAN 20160316, and was used most heavily. The second mostly used interview technique is the experience and behavior question which was used 19 times to elicit responses from DEAN 20160316. This was followed by the technique of support recognition which was used a total of 12 times. This data revealed certain interview technique of Patton (2002) was thus found to be effective in eliciting responses from DEAN 20160316 whereas others did not.



DISCUSSION AND CONCLUSION

Dean 20160316 mentioned quantitative methods do not allow any follow ups, or any way for elaboration which equated to lost of opportunities. This comprehensive presentation on the interview techniques of Patton (2002) could also contribute new knowledge on which interview technique was most used and which was least used on the respondents. Some of the interviewing techniques of Patton (2002) were not received well with the current study respondent. These interviewing techniques did not get the participants to respond well, to explain in length, and only provided small details. Some of these interview techniques even caused some of the participants to remain silent and relegated to just nodding their heads. However, some interviewing techniques by Patton (2002) were found to be very effective to elicit information from the respondents. The participants, when asked with the technique of summarizing transition, opened up in length, described fully, and carried on providing vital insights and experiences. Summarizing transition techniques were able to trigger sgreat responses from the respondents. Getting respondents to verbally open up and describe thoughts and experiences in great length is ultimate goal for every qualitative research. This provided new knowledge on which of the interviewing technique the participants took a liking to respond to. Knowing which interview technique was most effect among the case study participants may pave the way for future interviews on which interviewing technique works best for the case study respondents.

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FACIAL EXPRESSION WHILE IN PAIN: THE DIFFERENCES BETWEEN TWO SOCIOECONOMIC GROUPS

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ABSTRACT

The study investigated how psychological factor (negative affect) and physiological reaction predicted the intensity of pain perceived and facial expressed by two groups of socio-economic status (lower and upper SES). The study involved 201 participants (97 lower SES and 104 upper SES). All participants were healthy and pain-free. The pain was induced by Cold Pressor Test (CPT). Partial Least Square Structural equation modeling (PLS-SEM) demonstrated that the intensity of pain of lower SES group was significantly predicted by psychological, but not by physiological factor. The intensity of pain perceived further predicted their pain facial expression. Upper SES group showed different evaluation of the model. The model demonstrated that the intensity of perceived pain was positively predicted by psychological factor and negatively predicted by physiological reaction. However, the intensity perceived pain was not a predictor for the facial pain expression in the group. The finding showed that facial expression needs to be considered by medical profession as a pain communication from people with lower socio-economic background.

Keyword: pain perception, socio-economic status, facial expression, cold-pressor test

INTRODUCTION

While someone is in pain, he/she demonstrates certain behaviors, such as changing posture (bowing or extended), verbal (i.e. saying "ouch" or "it hurts"), or paralinguistic features (e.g. moaning, groaning). Facial expression is a part of paralinguistic feature and is considered as a social-communication of pain (Craig, 2004). By expressing the pain, the person is expecting others will be empathy and would do something to take the suffering away (Prkachin & Craig,

1995). Facial pain expression nowadays is gaining recognition as an important pain indicator to supplement self-report.

Self-report is a measurement of individual's subjective evaluation of pain experienced. Using a linear scale of visual analogue (VAS), or numerical (Numerical rating scale/ NRS), a person rates the intensity of pain perceived. VAS is convenient, easy to administer and also cultural-free, which makes it as a widely used tool in measuring pain (Turk & Melzack, 2001). However, it has several limitations. It requires a certain cognitive capacity to evaluate the pain retrospectively and to communicate it in either verbal or written in a scale (Labus, Keefe & Jensen, 2003). Thus, people with limited cognitive function, such as infants, mentally retarded persons or demented elderly would be incapable to use self-report (Anand & Craig, 1994). Facial expression, in contrast, is natural and spontaneous in expressing pain even in infants. Craig (2004) recommended using both self-report and facial pain expression in measuring pain.

Numerous studies in facial expression have been conducted to develop a more objective and a reliable pain measurement. It was started when Ekman and Friesen (1978) developed Facial Action Coding System (FACS) which identifies 44 actions that the face is capable of performing. The actions are defined in terms of the underlying muscular actions that go into producing them and descriptions of the appearance changes that they produce on the face. In observing 44 facial muscles movements when a person expressing emotions. Any facial action is decomposed into its constituent units by a trained observer. Numerous studies demonstrate the validity and reliability of FACS in discriminating pain expression from other emotions (e.g. Craig, Prkachin & Grunau, 2001). However, FACS is a laborious procedure, requiring many hours to learn the system, and to code each unit which requires great perceptual acuity and applying many complex decisions. Prkachin and Solomon (2008) found that pain conveyed by the face is involving limited numbers of actions, thus, it is possible to reduce complexity and the burden of the system. The Index of Facial Pain Expression (IFPE) developed by Prkachin and Solomon (2008) identifying the presence and intensity of four facial actions: brow lowering, orbit tightening, levator tightening, and closing of the eye.

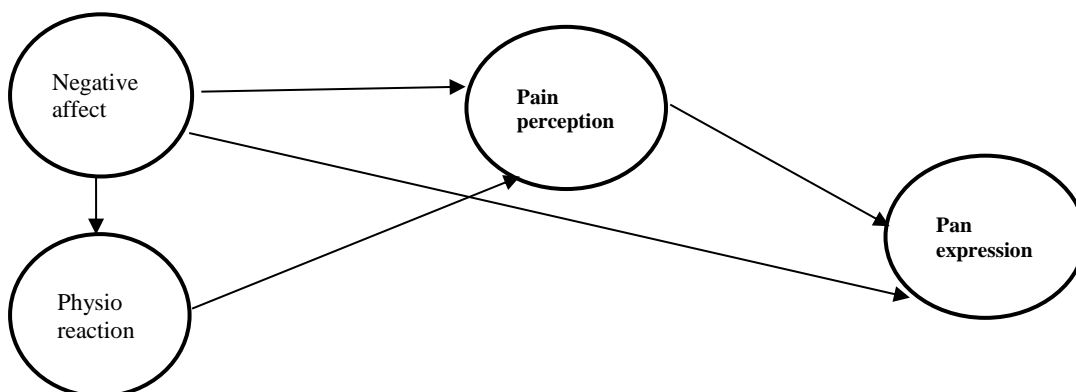
While IFPE has been proven in quantifying pain to make it more objective than commonly used measures (i.e. VAS), it should be noticed that studies are conducted in countries with Western cultures dominate. There is no study of facial pain expression yet conducted in eastern-culture countries, which may have different social values and norms from the western. Prkachin (2011) suggested that pain expression is shaped by culture and social norms. There are social display rules which might differ across cultures. Nayak, Shifflett, Eshun, and Levine (2000) found that Indian students expressed their pain less than American students as they thought it is not appropriate to openly express their emotion to others. Galanti (2001) also found that Filipino patients tend to be stoic while in pain compared to other ethnics. Matsumoto (2006) pointed that culture affects individual emotional modulation whether to express or to inhibit their emotional responses. Further, he pointed that culture does not only shape social rules among ethnics or race, it is also applied in societies which impose hierarchical social status.

The power and position which someone hold in social hierarchy shapes the way she/ he behave to others. Those who have high status and power in the hierarchy tend to be spontaneous in expressing their opinions and their behavior. In contrary, those who are low in social status tend to inhibit their social behavior to avoid sanctions or punishment imposed by people with higher status (Keltner, Gruenfeld, & Anderson, 2003; Langner et al, 2012). There have been findings on the relationship between social status and personality. Gawali (2013) found that Indian college students from low socio-economic status have a higher neuroticism and lower extraversion score than those with higher status. Another study in Punjabi, India, also found that poor students had lower extraversion scores, although there were no significant differences found in neuroticism scores (Kaur, 2014).

Numerous studies found that there is a relationship between neuroticism and cardiovascular function when respond to pain. Boggero, Smart, and Walker (2014) found that when induced by cold stressor pain, participants with higher neuroticism score have lower tolerance to pain. Further, Payne et al (2013) reported that individual with high neuroticism have a higher sensitivity to physiological change. They would perceive pain as a threat which need to be avoid of and put them in a further anxious state. Extroverts, according to Ferracuti and de Carolis (2005), are more tolerant to pain. However, Price and Barith (1988) found that despite of no significant differences in sensory and affective dimension of pain perception, extravert patients tend to be more expressive by complaining more about the pain to doctors.

The study would investigate the interaction between psychological variable (consists of neuroticism, anxiety trait and anxiety state), physiological reaction (blood pressure) affect pain perception (intensity of pain/ VAS-sensory and unpleasantness of pain/ VAS-affective), which in turn affect pain expression. Socio-economic status would moderate the interaction. The hypothesis model is described in Figure 1.

Figure 1. The hypothesis model of interaction between personality, physiological reaction, pain perception, and pain expression



METHODOLOGY

Two hundreds and five (97 participants from lower socio-economic status and 108 upper status) participants were recruited from neighborhood in Central Jakarta. Four persons (1 male and 3 females) had missing data caused by technical errors, thus were eliminated from the study. Total participants in the study were 201 participants (97 lower and 104 upper SES). All participants were selected according to criteria below:

- Healthy and pain-free Indonesian native male and female age 19-39 years old
- Minimum have had 9 years of education (junior high graduated)
- Body mass index 18-24,9 (normal weight) with normal blood pressure ($\leq 120/90$ mmHg)
- No history of cardiovascular-related disease nor hypertension.
- No history of chronic disease such as diabetes mellitus, TBC

The socio-economic status was categorized based on expenses per month and ownership of 10 properties (e.g. car, motorbike, air-conditioner, house electricity voltage ≥ 2200 Volt). Those whose personal monthly expenses were equal to or less than Rp. 1.000.000,- and owned less than 7 items is categorized as lower Socio-economic group. Participants with personal monthly expenses equal to or more than Rp. 5.000.000,- and have more than 7 items of ownership counted as upper socio-economic status.

Instruments

1. Cold-Pressor Test

Cold-pressor test was built from several instruments, which were a glass box size 43x30x33cm (Boyu Aquarium Fish Home ASD-430L, China) half- filled by cold water, a calibrated water cooler (Boyu C Series Aquarium Water Chiller, China) to keep water temperature as low as 2^o-3^oC., a water pump (Eheim Compact+ 2000, Germany) to circulate the water in the box, prevented it from local conduction and a plastic partition to rest lower left arm in the box.

2. Video-Camera

Two (2) units of video camera (SONY® DCR-SX65) were set for recording. One unit was located on the table. It was used to record participants' facial expression. Another unit was located behind the screen with 2 m length to record full-body gesture of participants.

3. Automatic digital Blood Pressure Monitoring

Two units of Blood Pressure Monitoring (BPM) OMRON® HEM-7080 were prepared for the study. One unit was located at the lounge room to measure baseline blood pressure and heart rate. Another unit was located in the Lab. Two sizes (small and medium adult size) cuffs were prepared for each unit BPM so that each participant would wear a proper cuff before measurements were taken.

There were several psychological measurements used in the study

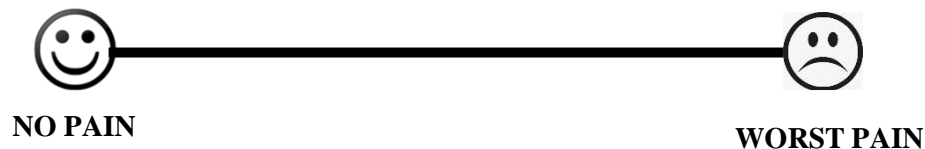
1. Neuroticism

The scale for neuroticism was taken from sub-scale neuroticism of Big Five Inventory of Personality/ BFI (John & Srivastava, 1999). The sub-scale consists of 8 items. Ramdhani (2012) has adapted the sub-scale to Indonesian with $\alpha = .74$ (neuroticism).

2. Visual Analog Scale (VAS)

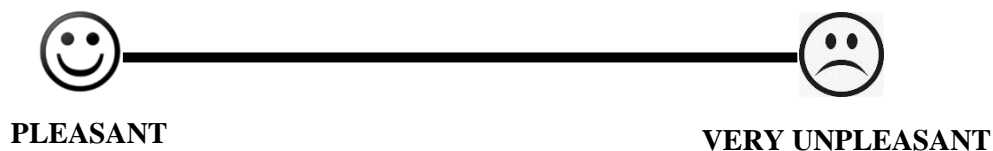
Two types of VAS used in the study. First, Visual Analog Scale for sensory dimension or VAS-S (the intensity of the pain) with 100 mm length (Figure 2). Participant made a cross at any point at the line to describe the intensity of the pain. Left anchor represented no pain. Right anchor represented worst pain. The length between left anchor to the cross written by participant would be participant's VAS-S score.

Figure 2. Visual Analog Scale for measuring sensory dimension of the pain (VAS-S)



Similar to VAS-S, VAS-A used 100 mm length horizontal line with an anchor at each line end (Figure 3). Participant made a cross at any point at the line to describe unpleasantness of the pain (affective dimension). Left anchor represented the pleasantness of the pain. Right anchor represented the unpleasantness of the pain.

Figure 3. Visual Analog Scale for measuring affective dimension of the pain (VAS-A)



3. State and Trait of Anxiety (STAI)

STAI was developed by Spielberger, Gorsuch, & Lushene (1964) and has been widely used to measure trait of anxiety and state of anxiety. Each scale consisted of 20 items with 4-point Likert scale. It has high reliability, $\alpha = 0,83$ to $\alpha = 0,95$ untuk for state of anxiety scale and $\alpha = 0.67$ to $\alpha=0,95$ (McDowell, 2006).

4. Facial Pain Expression

Prkachin and Solomon (2008) developed an index to measure facial pain expression based on 44 muscular units of Facial Action Coding System (FACS) from Ekman and Frieser (1978). They found that there are only four facial actions involved in pain expression, which are brow lowering (B), orbit tightening (O) levator tightening (L) and closing of the eye (C) (Prkachin & Solomon, 2009; Craig & Patrick, 1985). The four actions were indicated by brow lowerer (AU4); cheek raiser and lip compressor (AU6) and lip tightening (AU7), nose wrinkle (AU9) and upper lip raiser (AU10) (Table 1).

Tabel 1 Action Units in Facial Pain expression

AU	Actions	Area
4	brow lowerer	Brow
6	cheek raiser and lip compressor	Orbital
7	lid Tightener)	
9	Nose wrinkle	Levator
10	upper lip raiser	
43	eye closure	

Each AU at each frame was scored at 5-point scale of intensity. Started from subtle movement (A), slight movement (B), obvious (C), very obvious movement (D) to extreme/ maximal movement (E) (Ekman, Friesen, & Hager, 1978). Prkachin and Solomon (2008) convert alphabetical coding to numerical as follows: A=1, B=2, C=3, D=4, dan E=5. If there is no any movement at all, 0 is given. Exception only for AU43 (eye closure), the code is given binary (0=absence; 1= presence). Further Prkachin and Solomon (2008) purposed the formula below to quantify facial pain expression.

$$\text{Pain} = \text{AU4} + (\text{AU6} | | \text{AU7}) + (\text{AU9} | | \text{AU10}) + \text{AU43}$$

For actions at the same area (e.g. AU9 and AU10), the highest score is preferred. Thus, the index would range 0-16.

RESULT

Table 2 showed that lower SES group had lower body weight than upper SES, both in male $t(92) = -2.360, p = .020, 95\% \text{ CI} [-6.725, -5.79]$ and in female, $t(105) = -3.356, p = .001, 95\% \text{ CI} [-7.218, -1.8560]$. The Body Mass Index (BMI) difference evidenced only in male, where upper male has higher BMI than lower male group $t(92) = -2.09, p = .039, 95\% \text{ CI} [-1.670, -.0421]$. There were also no differences on systolic blood pressure across SES and sex. However, there was significant differences in diastolic BP and heart rate in females across SES, where lower female had higher diastolic BP $t(105) = 2.007, p = .047, 95\% \text{ CI} [.037, 6.083]$ and higher HR $t(105) = 3.313, p = .001, 95\% \text{ CI} [3.058, 12.179]$.

Table 2. physical and physiological characteristics of participants based on sex and socio-economic status (SES)

measurement	Male		Female	
	Lower (N=50)	Upper (N=44)	Lower (N=47)	Upper (N=60)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Age	29.4(6.2)	28.0(5.3)	29.5(5.8)	30.0(6.0)
height (cm)	166.2(7.5)	168.1(6.5)	152.3(2.2)	159.8(6.9)
Weight (kg)	52.8(7.4)	56.4(7.6)	46.0(5.8)	50.8(7.5)
BMI	19.5(2.1)	19.9(1.9)	19.9(2.4)	19.8(1.9)
BP_S (mmHg)	112.8(10.7)	112.6(10.9)	107.1(9.9)	104.8(12.8)
BP_D (mmHg)	72.9(6.7)	73.6(7.7)	73.3(6.1)	70.2(8.9)
HR (bpm)	79.9(11.5)	77.7(11.8)	87.7(13.3)	80.1(10.5)

Abbreviation: BMI = body mass index; BP_S = blood pressure (systolic); BP_D = blood pressure (Diastolic); HR = heart rate/ detak jantung

Tabel 3 demonstrated that lower SES group had a higher neuroticism score than upper group, both in males and in females. The lower SES showed higher anxiety trait and state than upper SES group. These applied in both sex, which lower SES female group ($M = 1,64$; $SD = 0,44$) had a higher score than upper female group in term of state anxiety ($M = 1,49$, $SD = 0,39$) and also had a higher score of trait anxiety ($M=2,18$; $SD = 0,36$) than the upper group ($M=1,94$, $SD = 0,36$). Similar findings in anxiety trait and anxiety state score in males across SES, which lower male scored higher in anxiety state were also found in lower male group ($M = 1,68$; $SD = 0,44$) compared to upper male ($M = 1,96$; $SD = 0,26$). F-tets demonstrated effect of SES on neuroticism $F(1,197) = 4.804$, $p = .030$. Effect of SES was also found in trait anxiety $F(1,197) = 29,718$, $p < .000$ and state of anxiety $F(1,197) = 5,517$, $p = .020$,

Tabel 3. Mean (M) dan Standard Deviation (SD) of negative affect of participants based sex and socio-economic status

Variable	Male ($N=94$)		Female ($N=107$)	
	lower ($N=50$)	Upper ($N=44$)	Lower ($N=47$)	Upper ($N=60$)
	M (SD)	M (SD)	M (SD)	M (SD)
neuroticism	2.61 (0.55)	2.41 (0.57)	2.64 (0.49)	2.48 (0.65)
Anxiety trait	2.23 (0.34)	1.96 (0.26)	2.18 (0.36)	1.94 (0.36)
Anxiety state	1.68 (0.44)	1.54 (0.36)	1.64 (0.47)	1.49 (0.39)

Partial Least Square Structural Equation Modeling (PLS-SEM) was used to calculate how much biopsychosocial factors predicted pain perception and pain expression. Psychological variable was composed from neuroticism, anxiety trait and anxiety state. Physiological reaction was composed by Systolic and Diastolic Blood Pressure. Pain perception was composed by both VAS-sensory (VAS-S) and VAS-affective (VAS-A). Pain expression was only measured by single indicator, which is the index of facial pain expression.

Measurement model evaluation

Convergent validity and discriminant validity was examined to evaluate measurement model. Convergent validity evaluated by each indicator's validity showed standardized factor loading (SLF), composite reliability (CR), cronbach alpha, and averaged variance extracted (AVE). Discriminant validity was evaluated by cross loading.

Only four item of neuroticism showed good validity, whose factor loading $> 0,50$ and t statistic $> 1,96$. Cronbach's alpha $> 0,70$ showed high reliability. AVE 0,5532 referred that four indicators contributed 55,3% of neuroticism. Only 17 items of state anxiety showed validity with composite reliability 0,925 and cronbach's alpha $\alpha = 0,91$ and AVE 0,432. Anxiety trait only had nine valid indicator with factor loading $> 0,50$. It had high reliability with composite reliability 0,89, Cronbach's alpha $\alpha = 0,86$ and AVE 0,48.

Tabel 4. Convergent validity evaluation of dimension psychological variable composed by neuroticism, anxiety trait and anxiety state

Dimension	Indicator	Factor Loading	T Statistics	Composite Reliability	Cronbach's Alpha	AVE
Neuro	BF4	0,7541	22,5581	0,8319	0,7332	0,5532
	BF14	0,7577	17,0626			
	BF19	0,7127	12,9900			
	BF39	0,7498	17,9960			
State	STpre1	0,7234	18,4315	0,9252	0,9144	0,4234
	STpre2	0,5969	8,1379			
	STpre3	0,6151	10,6804			
	STpre4	0,6207	12,0586			
	STpre5	0,5728	8,0814			
	STpre8	0,6714	16,4539			
	STpre9	0,6727	12,4669			
	STpre10	0,7242	12,5704			
	STpre11	0,5948	9,5910			
	STpre12	0,6943	14,3478			
	STpre13	0,7328	18,5564			
	STpre15	0,7112	13,5594			
	STpre16	0,5219	8,1669			
	STpre17	0,6461	11,3782			
	STpre18	0,6497	15,0924			
	STpre19	0,5593	8,4492			
STpre20	0,7035	14,2094				
Trait	STrait2	0,6633	15,2347	0,8929	0,8649	0,4827
	STrait8	0,6755	14,8756			
	STrait9	0,7041	19,0563			
	STrait11	0,7554	22,1111			
	STrait12	0,6406	12,8739			
	STrait15	0,5707	9,5962			
	STrait17	0,7314	15,3314			
	STrait18	0,7358	18,5444			
	STrait20	0,7544	24,0329			

Table 5 demonstrated that each indicator had good discriminat validity showed high validity in its own scale. For example, item 4 (BF4) of neuroticism only had high correlation at neuroticism scale and low at other two scales (anxiety trait and anxiety state). Further, indicators at state anxiety differed from trait anxiety as described at table 5.

Table 5. Discriminant validity of each indicators (cross loading) in psychological dimension

Indikator	neuro	State	strait
BF4	0,7541	0,3129	0,4426
BF14	0,7577	0,3003	0,3171
BF19	0,7127	0,1663	0,3044
BF39	0,7498	0,2964	0,4365
STpre1	0,2578	0,7234	0,1997
STpre2	0,1717	0,5969	0,1971
STpre3	0,2853	0,6151	0,3209
STpre4	0,2251	0,6207	0,3104
STpre5	0,0425	0,5728	0,0919
STpre8	0,1309	0,6714	0,2277
STpre9	0,3391	0,6727	0,3776
STpre10	0,2218	0,7242	0,2342
STpre11	0,2114	0,5948	0,1257
STpre12	0,3568	0,6943	0,3704
STpre13	0,3365	0,7328	0,3971
STpre15	0,1201	0,7112	0,1811
STpre16	0,1534	0,5219	0,2715
STpre17	0,3622	0,6461	0,3551
STpre18	0,4033	0,6497	0,4828
STpre19	0,0493	0,5593	0,0922
STpre20	0,1964	0,7035	0,1730
STrait2	0,3868	0,2685	0,6633
STrait8	0,2966	0,3194	0,6755
STrait9	0,3555	0,3066	0,7041
STrait11	0,4076	0,3423	0,7554
STrait12	0,3200	0,2629	0,6406
STrait15	0,3186	0,1271	0,5707
STrait17	0,3251	0,3182	0,7314
STrait18	0,3584	0,3122	0,7358
STrait20	0,4316	0,3189	0,7544

When convergent validity and discriminant validity showed good results, latent variable score (LVS) was calculated to obtain the validity and reliability of each dimension to a composed variable (i.e. psychological, physiological, pain perception and pain expression). LVS scores later would be used to evaluate measurement model with all variables (table 6).

The measurement of convergent validity showed a good result with fair cronbach alpha $\alpha = 0,66$ of psychological variable, but strong validity of physiological variable and pain perception. Greatest contribution was from trait anxiety dimension which highest factor loading (0,83), followed by neuroticism (0,80) and state anxiety (0,71). AVE of psychological variable 0,61 which mean 61,20% of variance of neuroticism, trait anxiety and state anxiety contributed in psychological variable.

Tabel 6. Factor loading values, t statistics, composite reliability, cronbach's alpha and average variance extraction of psychological, physiological variables, pain perception and pain expression

Variable	Dimension	Factor Loading	T Statistic	Composite Reliability	Cronbach's Alpha	AVE
Psychological	Neuroticism	0.8005	85.847	0.8249	0.6561	0.6120
	trait	0.8302	106.856			
	State	0.7113	56.372			
Physiological	BP-S	0.9538	158.578	0.9364	0.8487	0.8804
	BP-D	0.9226	84.793			
Pain perception	VAS-S	0.9115	430.490	0.9217	0.8311	0.8548
	VAS-A	0.9375	724.733			
Pain expression	IPFE	1	-	-	-	-

Physiological variable measurement had good convergent validity which each indicator, systolic and diastolic blood pressure have high validity. There was high contribution from each blood pressure measurement (factor loading 0,95 for systolic and 0,92 for diastolic). The reliability of these indicators for physiological variable was high with Cronbach's Alpha $\alpha = 0,85$ and AVE 0,88. The result confirmed that systolic and diastolic blood pressure can be composed in single physiological variable..

Pain perception variable was composed by VAS-Sensory (VAS-S) and VAS-Affective (VAS-A), which each has factor loading $> 0,5$. The reliability was high as referred by high composite reliability (0,92), high Cronbach's Alpha $\alpha=0,83$ and AVE 0,8548). The result confirmed that both VAS-S and VAS-A could be used in composing pain perception variable. Facial expression, however, was only measured by single indicator, which is the index of facial pain expression. Therefore, its factor loading is counted as 1. Cross loading at table 7 demonstrated that each indicator of psychological variable had higher correlation compared their correlations to other variables.

Table 7. Cross Loading between variables

Indicators	Psychological (psiko)	Physiological (fisio)	Pain perception (VAS)	Pain expression (Ekspres)
Neuroticism	0.8005	0.1267	0.2418	-0.0042
Anxiety trait	0.8303	0.0479	0.2289	0.1065
Anxiety State	0.7115	-0.0885	0.197	0.1185
Systolic Blood Pressure	0.0204	0.9557	-0.1523	-0.097
Diastolic Blood Pressure	0.0692	0.924	-0.0923	-0.0894
VAS-Sensory	0.2115	-0.1189	0.9115	0.252
VAS-Affective	0.3085	-0.1284	0.9375	0.241
Index pain expression	0.0917	-0.0994	0.2658	1.000

Structural Model Evaluation

Evaluation of structural model used to examine hypotheses of the effect of psychological, physiological variable to pain perception and pain expression (Figure 7). Socio-economic status (SES) which at previous analysis showed an effect to some variables was placed as moderator variable. Structural model evaluation was examined by t statistic value and R². First step in estimating the model without effect of moderator. The result would evaluate the effect of psychological and physiological variable to pain perception and pain expression. Second step of the evaluating the model is to examine moderator effect of socio-economic status (SES).

Figure 7. The evaluation of structural model

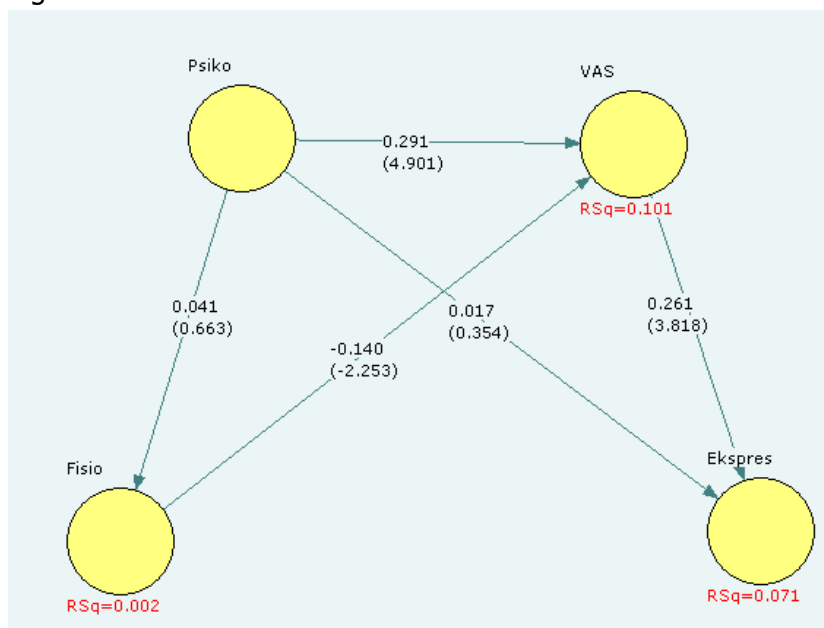


Table 8 showed the structural model evaluation resulted that psychological variable significantly affect VAS, $t = 4,9, p < 0,05$. Path coefficient (β) 0,29 pointed that increasing psychological (negative affect) variable would increase the intensity of pain perceived. Further, pain intensity significantly affected pain expression, $t = 3,82$, with $\beta=0,26$. However, psychological variable did not affect physiological reactions, $t = 0,66$, with $\beta=0,04$. Physiological variable had significant negative effect on pain perception, $t = -2,53, \beta=-0,14$. Furthermore, psychological variable did not direct effect on pain expression, $t=0,354, p>0,05, \beta=0,017$.

Table 8. Structural model evaluation

The effect	β	SE	t	Hypotheses
Psychological → pain perception	0.291	0.0594	4,901	Accepted
Pain perception → pain expresion	0.261	0.0684	3,818	Accepted
Psychological → physiological	0.041	0.0618	0.663	Not accepted
Physiological → pain perception	-0.14	0.0621	-2.253	Accepted
Psychological → pain expression	0.017	0.048	0.354	Not accepted

There were three structural model evaluated (Table 9). First, the effect psychological variable on physiological variable, $R^2 = 0,002$, which pointed that only 0,2% psychological variable contributed to physiological variable. Second, the effect of psychological and physiological variables on pain perception, $R^2=0,10$ which explained that those variables together contribute 10% of variance of pain perception. Third, the effect of psychological and pain perception, $R^2=0,07$ explained that the two variables contribute 7% of variance pain expression.

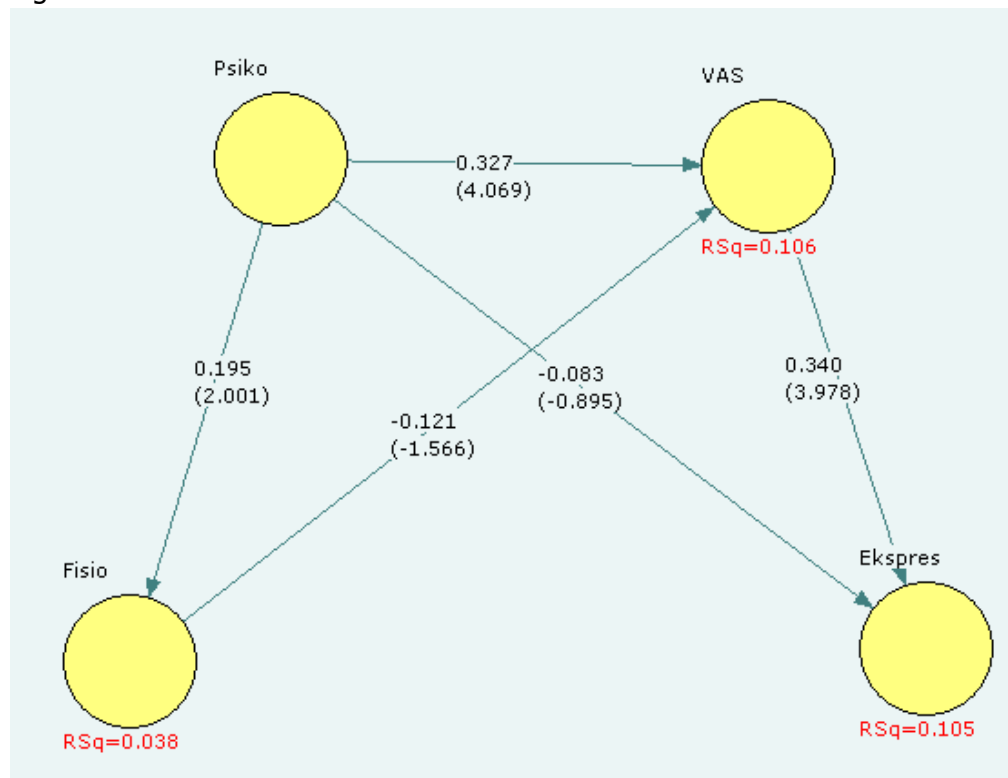
Table 9. R^2 of the model

Structural model	R^2
Effect psychological on physiological	0,002
Effect psychological and physiological variables on pain perception	0,101
Effect psychological variable and pain perception on pain expression	0,071

Structural model evaluation with Socio-economic variable as moderator

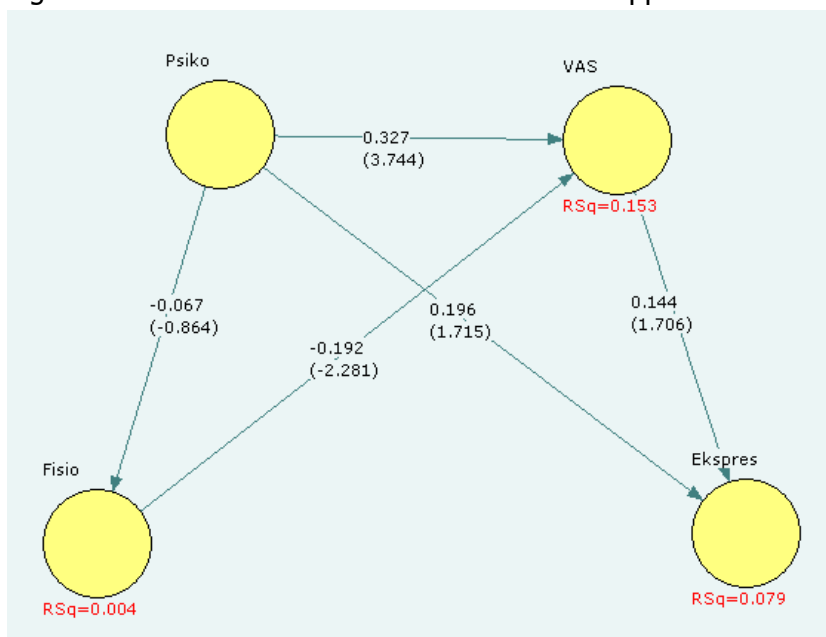
Structural model with socio-economic status as moderator variable was evaluated (Figure 8). Figure 8 showed psychological variable significantly affect pain perception, $t = 4,07$, $p < 0,05$, $\beta=0,33$. Further, pain perception affected pain expression, $t=3,98$, $p < 0,05$, $\beta=0,09$. The path between psychological variable and physiological variable was correlated significantly, $t=2,00$, $p < 0,05$, $\beta =0,19$. However, physiological and pain expression was negatively correlated but not significant. The similar finding was also found in correlation between psychological variable and pain expression, which also negatively correlated, $t=-0,89$, $p > 0,05$, $\beta = -0,08$.

Figure 8. the evaluation of structural model of lower SES



Model with upper SES showed in Figure 9 demonstrated different finding with those found in lower SES. There was significant correlation between psychological variable and pain perception, $t = 3,74$, $p < 0,05$, $\beta = 0,33$. However, a path from pain perception showed insignificant positive correlation with pain expression, $t = 1,71$, $p > 0,05$, $\beta = 0,14$. There was also an insignificant correlation between psychological variable and pain expression, $t = 1,72$, $p > 0,05$, $\beta = 0,20$. The contribution of psychological variable together with physiological variable to pain expression variance was 15%. Further, the contribution of pain expression and Psychological variable to pain expression was 7,9%

Figure 9. the evaluation of structural model of upper SES



DISCUSSION

Although the pain perception predicted the pain expression in the two groups, there was a different role of psychological factor in predicting pain expressing between the groups. Psychological factor correlated positively with pain expression in the upper, while it was found negatively correlated at the lower SES. Langner et al (2012, and also Keltner, Gruenfeld & Anderson, 2003) stated that the power and position which someone hold in social hierarchy shapes the way she/ he behave to others. Those who are low in social status tend to inhibit their social behavior to avoid sanctions or punishment imposed by people with higher status, while those who have high status in the hierarchy tend to be spontaneous in expressing their opinions and their behavior. Indonesian is a collective society with a clear social hierarchy. While people with lower socioeconomic background was associated with stress and low health status (McEwen & Gianaros, 2010), they might have accustomed to suppress their emotional expression. The doctors should be cautious in interpreting pain experienced by their patients

with lower SES background. Instead of relying on facial pain expression, doctors should count on their pain perception measured by simple Visual Analogue Scale.

CONCLUSION

The study has some limitations in terms of few numbers of participants and was conducted in a controlled experiment which could not be generalized in clinical setting. However, experimental setting provides opportunities to control extraneous variables which may intervene the predicted variables. Further study should be conducted involving clinicians to interpreting the facial pain expression in terms of pain perception.

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FAMILY AND SCHOOL FACTORS ASSOCIATED WITH THE INTERNALIZING AND EXTERNALIZING BEHAVIORAL PROBLEMS AMONG JAPANESE BOYS AND GIRLS

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ABSTRACT

Objectives: To clarify what the family and school variables are correlated with the internalizing and externalizing behavioral problems among Japanese boys and girls.

Methods: A self-administered questionnaire survey, including the Japanese version of the Strength and Difficulties Questionnaire (SDQ) and items asking about the family and school environment/atmosphere, was conducted for eight elementary schools. Parental survey was also conducted to ask about parenting style and family atmosphere, as well as SDQ. A total of 541 students participated in a cross-sectional survey. One-year later, a follow-up survey was conducted to students in five schools, and 134 students agreed to respond.

Design: Cross-sectional and longitudinal questionnaire survey.

Main Outcome Measures: Three out of the five SDQ subscales—conduct problems (COND), hyperactivity/inattention (HYP) and emotional symptoms (EMO). Expedient diagnostic algorithm using SDQ items proposed by Goodman et al. (2000) for “unlikely,” “possible” and “probable” cases of COND, HYP and EMO.

Results: Of the 541 students surveyed, 120 (22%) and 28 (5%) were assessed as “possible” and “probable” cases of COND. The corresponding numbers of students were 29 (5%) and 5 (1%) for the HYP and 20 (4%) and 3 (1%) for the EMO, respectively. Multiple logistic regression analysis with stepwise selection using significant variables detected by the simple correlation analysis revealed that resilience, satisfaction with study, academic stressors, mother support, family intimacy and control in parenting were associated with COND. As to HYP, homeroom teacher stressors and mother support yielded a significant association, and as to EMO, having breakfast, optimism and satisfaction with homeroom teacher was associated. Repeated ANOVA revealed that students who transitioned from elementary school to junior-high school showed exaggeration of externalizing (COND, HYP) and internalizing (EMO) problems. Detailed inspection yielded that HYP and EMO of boys got worse through the school transition while girls did not show any significant change.

Conclusion: Healthy family and school environment might be protective against externalizing behavioral problems. Transition from elementary to junior-high school might cause some adverse effects on boys, while such effect might not be observed for girls.

Keyword: internalizing problems, externalizing behavioral problems, resilience, parenting style, family and school environment

INTRODUCTION

Mental and physical health conditions and developmental problems in children and adolescents have long been an important concern for pediatricians and school health professionals (Patalay et al., 2016). Early detection based on the proper assessment is a necessity for appropriate early treatment to prevent increasing the children's psychosocial problems, which could lead to the development more severe psychiatric disorders (Mieloo et al., 2013). According to recent empirical study, at least one in ten children and adolescents is affected by emotional and/or behavioral problems (Hölling et al., 2014).

Children and adolescents with mental health problems, so-called internalizing and externalizing behavioral problems, are at risk of developing negative outcomes later in life (Aviles et al., 2006). The externalizing behavior problems refers to a grouping of behavior problems that are manifested in children's outward behavior and reflect the child negatively acting on the external environment (Eisenberg et al., 2001). Three key behavior problems similarly make up this construct: aggression, delinquency, and hyperactivity (Hinshaw, 1987). In contrast, children may develop internalizing behavior problems such as withdrawn, anxious, inhibited, and depressed behaviors, problems that more centrally affect the child's internal psychological environment rather than the external world (Pophillat et al., 2016).

The developmental psychopathology framework understands children and adolescents as being in dynamic relationships between the developing individual and their internal/external contexts. Social-emotional (mental health) development in children and adolescents is influenced by multiple environments such as home, school and community (Aviles et al., 2006).

LITERATURE REVIEW

According to the literature review on earlier empirical studies (Connor, 2002), risk factors of externalizing behavioral problems could be grouped into three domains: individual, family, and outside the family, respectively. Individual risks include genetic factor, temperament, alcohol and nicotine exposure during fetal period, and attachment style in early childhood. Family risks include nurturing and childcare/parenting style, family structure and functioning, parental psychopathology, and child abuse and neglect. Risk factors outside the family contain school and various kinds of social loss such as low socio-economic status and unemployment.

It should be noted that these risk factors do not exist independently, but multiple risk factors are intertwined and influenced not only on susceptible children but also on their parents during the developmental stage. For instance, the presence of externalizing behavior problems in children is associated to varying degrees with disturbances in family and marital functioning, disrupted parent-child relationships, reduced parenting self-efficacy, and increased levels of parenting stress and parental psychopathology (Johnston & Mash, 2001).

It is suggested that mother's psychopathology may also be linked to the child's mental health problems through mediating rearing factors such as low warmth and excessive punishment (Loeber et al., 2009). Similarly in Japan, mothers' warmer attitude was related to children's lower depression (Matsuoka et al., 2011). These undesirable issues could also be observed in classroom and school: i.e., academic difficulties and poor school engagement for children, greater difficulties in teaching for teachers, disrupted teacher-student and peer relationships, and increased levels of teaching stress. Poor school performance is associated with numerous delinquent activities (Crosnoe, 2006).

As with risk factors, in contrast, protective factors have generally pertained to individual child characteristics (e.g., temperament, cognitive style, social skills, self-efficacy, and self-esteem) or environmental and learning experiences such as effective parenting, high family cohesion, and positive parent-child relationships (Jakobsen et al., 2012). Greater school engagement was also associated with higher levels of well-being and a lower likelihood of delinquency (Tyler et al., 2006).

Although not a few studies have conducted on children's externalizing/internalizing behavioral problems in Japan, most were depended on a sole assessment such as a parent-reported measure (e.g., Saito et al., 2016). That is, few studies have utilized multi-informants, though items for internalizing problems showed differential item/informant functioning across children and parents (mothers, fathers) (Iwata et al., under the review). Moreover, although all the previous epidemiologic studies in Japan used a kind of dimensional scales providing continuous values, any classification of the symptom severity assessed by multi-informants could provide more meaningful information to consider effective preventive and/or protective treatment/procedure at earlier stage.

This provides the rationale to adopt a sort of diagnostic classification of the symptomatology to capture the externalizing/internalizing behavioral problems. Thus, this study aims to investigate (a) the prevalence of "possible" and "probable" cases of externalizing/internalizing behavioral problems, as assessed by multi-informants, (b) risk and protective factors relating externalizing/internalizing behavioral problems, while personal, family and school variables are considered simultaneously among Japanese boys and girls.

METHODOLOGY

During the autumn in 2016, a survey was conducted using self-administered questionnaires for 5th and 6th grade students in eight public elementary schools and parents of students in six out of eight schools in four regions of A prefecture, western part of Japan.

Child survey: Homeroom teachers distributed the student questionnaires with envelopes and seal tape to their students in the class and explained the ethical matters such as that he/she did not have to respond to items to which he/she did not want to respond by reading the explaining statement in front of the students; these issues were also specified on the cover sheet of the questionnaire. The questionnaire consisted of the Japanese version of the Strength and Difficulties Questionnaire (SDQ)(Goodman, 1997; Matsuishi et al., 2008); items related to lifestyle; and several scales measuring school stressor, social support, resilience, school and family environment, and others. After completing the questionnaire, each student sealed the questionnaire in her/his own envelope, which could reflect the confidentiality of responses.

Furthermore, a follow-up survey was conducted one-year later only for students in five elementary schools and two junior-high schools, and 134 students agreed to respond. The 6th graders of the five elementary schools at the initial survey had transferred into these two junior-high schools at the follow-up survey.

Parent survey: Each student was handed the questionnaires for her/his mother and father. The parent survey questionnaire consisted of the parent form SDQ and family relationships and atmosphere. A document for explaining the research objectives was also entered.

Ethical consideration: We followed the ethical principles for research with human subjects of the American Psychological Association (2005). We obtained permission from the school principals. We had also distributed letters explaining the survey's purpose to the students' parents, along with a document requesting their cooperation in the parent survey and soliciting questions about the survey. We confirmed that no one refused to complete the survey. Participants were informed of the overall information about the study, which emphasized the confidentiality of their answers and their freedom to decline participation, and asked them to reply only if they agreed.

Main outcome variables: Three out of the five SDQ subscales—conduct problems (COND), hyperactivity/inattention (HYP) and emotional problems (EMO) were used as dependent variables. Each student was assessed by expedient diagnostic algorithm using SDQ items proposed by Goodman et al. (2000) for "unlikely," "possible" and "probable" cases of COND, HYP and EMO. This algorithm utilized some adult's/guardian's observations on the adaptability of child to be assessed. However, considerable number of parents skipped to respond, and available data were obtained from 63.4% of mothers and 53.7% of fathers, respectively (Iwata, 2019). Therefore, we applied an imputation strategy putting teacher's responses instead of parent observations.

Statistical procedures: Spearman rank-order correlations were calculated between main outcome variables (unlikely=0, possible=1 and probable=2) and personal, school and family variables to detect significant correlates of each of externalizing and internalizing problems. Multiple logistic regression with stepwise selection was then conducted using these variables to determine the greater correlates among these variables, while the categories of "possible" and "probable" were combined into one category due to fewer "probable" cases for HYP and EMO. Possible candidates of school and family variables, as well as personal variables such as resilience, were categorized into three levels as high, medium or moderate and low for the use of odds ratio obtained by logistic regression. In order to minimize the likelihood of sample loss due to missing data, only self-reported variables were entered into the logistic regression analysis. Furthermore, as a longitudinal analysis, repeated ANOVA was conducted using scale scores on COND, HYP and EMO.

RESULTS

Of the 541 students surveyed, 120 (22%) and 28 (5%) were assessed as "possible" and "probable" cases of COND. The corresponding numbers of students were 29 (5%) and 5 (1%) for the HYP and 20 (4%) and 3 (1%) for the EMO, respectively. These prevalence of COND and HYP yielded significant gender differences: i.e., boys suffered more from these problems than girls. EMO did not vary by gender.

According to the simple correlation analysis, many variables were associated with both COND and HYP: i.e., these variables included dissatisfaction with student's school life, lower resilience, school stressors, lack of parental support, low family intimacy, high in parental control, worse in family atmosphere and low adaptability of family structure. EMO was also correlated with some of these variables, whereas most were of interpersonal, such as the relationships with peers and homeroom teachers.

Multiple logistic regression analysis with stepwise selection was conducted using significant variables detected by the simple correlation analysis. Although we aimed to investigate the possible correlates among parent-reported variables, the response rates of parents were considerably low, and thus only student-reported variables were used as possible candidates in this study.

Table 1. Factors Associated with COND

	Conduct Problems (357 vs 128) ^a	
	OR	(95% CI)
Personal Variables		
Ambitious Activity *		
High	2.43	(1.35 – 4.38) **
Moderate	reference	
Low	1.50	(0.85 – 2.64)
School Variables		
Satisfaction with Study **		
High	reference	
Moderate	0.77	(0.44 – 1.32)
Low	2.92	(1.62 – 5.27) **
Academic Stressors **		
Low	reference	
Moderate	1.34	(0.74 – 2.42)
High	2.11	(1.20 – 3.71) **
Family Variables		
Mother Support **		
Low	2.09	(1.04 – 4.21) *
Moderate	reference	
High	2.88	(1.44 – 5.75) **
Family Intimacy **		
High	reference	
Moderate	2.19	(1.19 – 4.03) *
Low	3.54	(1.71 – 7.33) **
Control in Parenting **		
Low	reference	
Moderate	2.30	(1.26 – 4.21) **
High	2.50	(1.34 – 4.65) **

^a: Unlikely, possible and probable cases (n=357, 107 and 21) by the SDQ algorithm (Goodman et al., 2000).

*p<.05, **p<.01

Table 1 shows the result of multiple logistic regression on COND. In this analysis, classification categories of "possible" and "probable" cases were combined as "cases" (n=128) in comparison with "unlikely" (n=357). Total six variables were remained in the final model by stepwise selection. As the personal variables, children who were high in ambitious activity (one of the resilience components) were more likely to be associated with COND as compared to moderate level in ambitious activity. As the school variables, lower satisfaction with study and higher academic stressors revealed significant odds ratios for COND. Although the candidates showing significant correlations contained some interpersonal variables at school, such as relationships with peers and homeroom teachers, only academic issues were remained in the final model.

As the family variables, high and low in mother support (as compared to medium support level), low to moderate family intimacy and high to moderate control in parenting yielded significant odds ratios for COND. Although several family variables reported by mothers and fathers were significantly correlated with COND, they could not be examined the model due to a fairly number of missing observation.

Table 2 shows the result of multiple logistic regression on HYP. In this analysis, combined categories of "cases" (n=28) were compared with "unlikely" (n=457). Only two variables were remained in the final model by stepwise selection. As the school variables, high and low in

Table 2. Factors Associated with HYP

	Hyperactivity/Inattention (457 vs 28) ^a	
	OR	(95% CI)
School Variables		
Homeroom Teacher Stressors *		
Low	2.20	(0.27 – 17.71)
Moderate	reference	
High	5.66	(0.73 – 44.13)
Family Variables		
Mother Support **		
Low	6.19	(1.40 – 27.46) *
Moderate	reference	
High	2.16	(0.45 – 10.44)

^a: Unlikely, possible and probable cases (n=457, 23 and 5) by the SDQ algorithm (Goodman et al., 2000).

*p<.05, **p<.01

Table 3. Factors Associated with EMO

	Emotional Problems (497 vs 21) ^a	
	OR	(95% CI)
Lifestyle		
Having Breakfast *		
Everyday	reference	
Others	3.24	(1.20 – 8.77) *
Personal Variables		
Optimism **		
High	2.97	(0.48 – 18.47)
Moderate	reference	
Low	6.66	(1.48 – 30.00) *
School Variables		
Satisfaction with Homeroom Teacher *		
High	reference	
Moderate	0.98	(0.26 – 3.79)
Low	4.46	(1.62 – 12.28) **

^a: Unlikely, possible and probable cases (n=497, 19 and 2) by the SDQ algorithm (Goodman et al., 2000).

*p<.05, **p<.01

homeroom teacher stressors (as compared to medium stressors level) were associated with HYP while each odds ratio did not reach a significant level. As the family variables, similar to COND (Table 1), mother support yielded a significant association with HYP, whereas only odds ratio for low in mother support as compared to medium support level was significant.

Table 3 shows the result of multiple logistic regression on EMO. In this analysis, combined categories of "cases" (n=21) were compared with "unlikely" (n=497). Only three variables were remained by stepwise selection. As the lifestyle variables, one or more missing in having breakfast per week (as compared to having every morning) was associated with EMO. As the personal variables, low in optimism (as compared to moderate level) was significantly correlated with EMO. As the school variables, low satisfaction with homeroom teacher was associated with EMO. However, no family variables were remained in the final model.

Additional analysis was conducted to examine the longitudinal changes in externalizing and internalizing problems over one year. We obtained only from the self-report data by students. Thus, any expedient classification could not be available in this analysis, but the continuous values might provide detailed information of the change on these problems over one year.

Repeated ANOVAs revealed significant two-way interaction (wave x grader-cohort) and marginal three-way interaction (wave x gender x grader-cohort) on scale scores of COND and HYP: i.e., these scores did not

vary from the 5th graders to 6th graders in elementary school (elementary school cohort), while the scores increased significantly from the 6th graders in elementary school to 1st graders in junior-high school group (school transition cohort). This tendency was salient among boys. Repeated ANOVA on EMO also revealed the similar but somewhat weak tendency. Further simple correlation analyses revealed that few family and school variables were significantly correlated with the changing scores of these scales.

DISCUSSION

A self-administered questionnaire survey on externalizing and internalizing behavioral problems as measured by multi-informants' responses for 541 public elementary school students revealed that one-fourth (27%) of the students tended to have COND-like problems, and HYP and EMO tendencies were recognized for 6% and 4% of the students, respectively, according to expedient diagnostic algorithm of the SDQ (Goodman et al., 2000). Although many correlates were observed by a simple correlation, multiple logistic regression revealed that personal (resilience), school (satisfaction with study, academic stressors) and family (mother support, family intimacy and control in parenting) factors were associated with COND, school (home-room teacher stressors) and family (mother support) factors were significantly correlated with HYP, and lifestyle (having breakfast), personal (optimism) and school (satisfaction with home-room teacher) factors were associated with EMO.

Earlier empirical studies have suggested that the presence of externalizing behavioral problems such as attention-deficit/hyperactivity disorder (ADHD) in children is associated to varying degrees with disturbances in family and marital functioning, disrupted parent-child relationships, reduced parenting self-efficacy, and increased levels of parenting stress and parental psychopathology (Johnston & Mash, 2001). That is, children with high in externalizing behavior have been more likely to receive negative nurturing attitude from parents and less likely to receive positive nurturing attitude due to their symptomatology.

As studies in Japan, children's externalizing problems was negatively correlated with parental warm attitudes and positively correlated with parent-child conflicts (Saito et al., 2016). In our study, mother support was also recognized as common risks for both COND and HYP (Table 1 and 2), whereas interestingly, moderate level of mother support might be desirable, and neither lower nor higher support might not be good.

Positive rearing and care were negatively related to externalizing behavioral problems, whereas scolding, difficulty in bringing up and care were positively related to such problems (Matsuoka et al., 2011). These situations might be in line with our result on lack of family intimacy detected as another risk for COND (Table 1). Over-control in parenting was also the risk for COND. This might be in line with van der Kaap-Deeder et al. (2017), who demonstrated that psychological control exaggerated the students' daily need frustration, resulting then in psychological ill-health, whereas autonomy support enhanced need satisfaction, leading to well-being. Also a controlling context has been found to be detrimental for children's psychological functioning (Soenens & Vansteenkiste, 2010).

Suldo et al. (2006) reported that students who do well in school and feel that they have a supportive school environment are more likely to perceive a higher level of well-being. Likewise, EMO was significantly associated with the satisfaction with homeroom teacher in this study. Our result on COND also showed significant association with poor school engagement and achievement (dissatisfaction with study and higher academic stressors).

The use of expedient diagnostic grades for assessing externalizing/internalizing behavioral problems was a strength of this study. However, a further examination should be done for the appropriateness of the algorithm proposed by Goodman et al. (2000). The prevalence of "possible" and "probable" cases were considerably different between COND and HYP and/or EMO. And this might result in fewer correlates were observed for the latter two problems.

According to Goodman et al.'s algorithm, the "possible" or "probable" cases were much fewer for HYP, though the HYP scale score was approximate 2.0 higher on average than that of COND. This was due to the higher cut-off threshold being set on the HYP. However, considering the empirical evidence by epidemiologic surveys, the prevalence of HYP seemed to be at a slightly lower level while that of COND seemed to be overestimated. In other words, the current threshold for COND seemed lower than the actual situation, and thus the threshold should be moved toward higher level to some extent.

Students who transitioned from elementary school to junior-high school showed exaggeration of externalizing (COND and HYP) and internalizing (EMO) problems. Detailed inspection yielded that HYP and EMO of boys got worse through the school transition while girls did not show any significant change. The reasons why these phenomena emerged should be investigated in a further study.

CONCLUSION

An initial attempt to adopt an expedient diagnostic algorithm based on the multi-informant SDQ yielded that one-fourth of the students tended to have COND-like problems, and approx. one in twenty tended to have HYP and EMO tendencies among elementary school students in Japan. A further research should be warranted to revise the algorithm to provide appropriate information of each problem. Risk factors for externalizing behavioral problems contained resilience, academic issues at school and family issues including teacher- and mother-child relationships and parenting style. Risk factors for internalizing problems were breakfast (life-style), optimism and teacher-child relationship (school).

Accordingly, academic support and appropriate attitude of teacher and mother to child should be progressed to reduce the risks of these problems among Japanese children, while mainly boys. Healthy family and school environment might be protective against externalizing behavioral problems, while internalizing problems seem to reflect in part a personal factor. Transition from elementary to junior-high school might have some adverse impacts on boys, while such effects were not observed for girls. The correlates and causal factors of these phenomena should be further investigated to protect and prevent exacerbations of externalizing/internalizing behavioral problems.

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IMPACT OF SOCIAL SUPPORT ON MENTAL HEALTH A STUDY ON DEPRESSION OF CHINESE INTERNATIONAL STUDENTS IN JAPANESE LANGUAGE SCHOOL

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ABSTRACT

With the rapid increase of foreigners in Japan, interest in intercultural studies is being focused on the international students' mental health and social support. In particular, the ratio of Chinese international students to foreign students in Japan enrolled in both Japanese language schools and universities, that have increased in recent years, continues to be the top.

Our research participants were thirty-three Chinese international students studying in the universities of Japan (JU) and twenty-nine Chinese international students studying in the Japanese language school (JLS). This study conducted a survey using a questionnaire consisting of three parts: Depression Self Assessment Scale (SDS), Mental Health Questionnaire (GHQ), and Social Support Scale (SS) for Chinese international students in Japan (Four areas: research area, human relations area, emotional area, environment and culture area × Four types: substance, psychology, guidance, information), I compared the result of JLS with JU.

As a result of t-test, JU students showed significantly lower total GHQ scores than JLS students, and higher total SS scores than JLS students. In addition, JLS students had a significantly higher total score of SDS than JU students. In other words, as a result of correlation analysis, in JU group, SS scores of human relationship area and GHQ scores were found significant negative correlation. In the JLS group, a significant negative correlation was found between the SS scores and the GHQ scores. As for SDS, no correlation was found between the JU group and the JLS group with the SS.

Therefore, in the same cross-cultural environment, although JLS receives less SS than JU, the JLS group showed worse depression and mental health than the JU group. The results showed that more attention should be paid to social support in JLS.

Keyword: social support, mental health, depression, Chinese international students, Japanese Language School

INTRODUCTION

As a country where Japan is opened by the world, it has become an important part of developing a "global strategy" to expand the flow of human resources. The ratio of Chinese to international students enrolled in JLS continues to be the top until 2018 (Association for the Promotion of Japanese Language Education, 2019). Chinese foreign students in Japan accounted for 107,000, 40.2% of the total, and ranked first (Japan Student Services Organization, 2019). One of the reasons for this large number is benefit of China's remarkable economic development in recent years. With the rapid increase of foreigners in Japan, the interest is being focused on the international students' mental health and social support.

International students are expected to be stressful from various aspects such as daily life, study, research, human relationships, and emotions. There are many studies for international students attending JU, there are relatively few studies for international students attending JLS. In addition, it is pointed out that entrance examination of Chinese students at JLS are more stressed than at JU. In a survey by Murase, Murase, Kitabatake, & Yamauchi (1996), Chinese international students enrolled in JLS were significantly more depressed than Chinese international students enrolled in JU. The environment is different between the JU and the JLS, and the social support that can be received is also considered different. While the number of Chinese students in Japan is increasing, support for Chinese students' adaptation to Japanese culture is not sufficient. You can receive various types of support if you are enrolled in a JU, but support measures for students of JLS that are in an unstable situation until the course is decided are relatively insufficient.

Given this background, the purpose of this study is to examine and clarify the relationship between social support and mental health and depression for Chinese students studying at JLS and JU. In this study, we research on mental health and depression and social support, and compare and examine JU with JLS.

METHODOLOGY

Survey time The survey was conducted from May 2019 to July 2019.

Participants Participants were 32 Chinese international students enrolled in Japanese language schools in Tokyo (JLS group) and 35 Chinese international students enrolled in Japanese universities (JU group).

According to the status of the questionnaire, those that no question was answered were removed, and 62 students, 29 Chinese students (20 males, 9 females, average age is 20.83 years, $SD = 2.92$) in JLS, and 33 Chinese students (16 male and 17 female average age is 24.33 years, $SD = 3.47$) in JU were analyzed.

Composition of questionnaire

The survey sheet included the following items. These were all described in Chinese, and the answer was also Chinese.

Personal attribute We asked about age, gender, duration of stay in Japan in Japan, and plans after graduation.

Rating scale

Social support scale for Chinese students in Japan; SS

The Chinese version of the social support(SS) scale for Chinese foreign students in Japan (Zhou, 1993) was used. Zhou (1993) create a social support scale of 29 items for Chinese international students with reference to the precedence research and considering the situation of Chinese foreign students. The four areas are research areas, human relations areas, emotional areas, and environment and culture areas. The four types are physical type, psychological type, instructional type, and informational type. Five points were used as the scoring method. The higher the score, the more social support is obtained.

Mental Health Questionnaire; GHQ

In order to evaluate mental health, we used the Chinese version of The Mental Health Questionnaire (Chen Cui, Zhang Hongjing, Jiang Hong, Li Wenjie, & Lv Li, 2010), which was created based on the 60-item version of Goldberg and Hillier (1979).

The scale has four sub factors: physical symptoms, anxiety and insomnia, social disability, and depression. As scoring method, four methods are used, and the higher the score, the worse mental health is shown.

Self-rating Depression Scale; SDS

The Chinese version of Wang's Self-rating Depression Scale (Sang) was developed by Zung, WWK, Richards CB, & Short MJ (1965). The Chinese version of Self-rating Depression Scale (Wang Zhengyu, & Chi Yufen,1984) was developed by Zung, WWK et al (1965).It consists of 20 questions, all of which carry out a four-point rating (always, often, occasionally, rarely). The score is higher, the depression is worse.

Ethical consideration

Out of ethical consideration, the answers are provided anonymously. All the answers would be quantified to protect personal information. Before answering, the respondents would be

explained that the investigation was not mandatory, then we began to answer with the consent of the respondents.

RESULT

Comparison of Japanese language school group and university group by *t*-test

The *t*-test was performed for each sub scale of the scale measured in this study (Table 1).

Table1 Descriptive statistics and comparison of JLS group and JU group by t test

		Total		JLS		JU		<i>t</i> value
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
SDS	Total	51.31	9.15	55.04	7.85	48.03	9.05	3.24**
GHQ	Total	4.87	5.22	6.72	5.35	3.24	4.58	2.76**
	physical symptoms	1.52	1.68	2.24	1.82	.88	1.24	3.39**
	anxiety and insomnia	1.24	1.73	1.72	1.93	.82	1.45	2.11*
	social disability	1.19	1.59	1.48	1.63	.94	1.52	<i>n.s.</i>
	depression	.92	1.74	1.28	1.94	.61	1.50	<i>n.s.</i>
SS	Total	92.68	27.26	76.59	21.71	106.82	23.74	-5.21***
	R.SS	29.00	9.43	22.24	6.76	34.94	7.20	-7.12***
	H.R.SS	19.48	6.12	16.14	5.40	22.42	5.15	-4.69***
	E.SS	19.09	6.52	16.40	5.51	21.48	6.48	-3.32**
	E&C.SS	25.10	7.90	21.83	7.24	27.97	7.42	-3.29**
	PH.SS	22.44	6.50	19.90	6.08	24.67	6.10	-3.08**
	PS.SS	35.85	11.06	29.59	9.16	41.36	9.62	-3.92***
	INS.SS	18.90	5.97	15.24	4.56	22.12	5.19	-5.51***
	INF.SS	15.48	5.17	11.86	3.76	18.67	4.03	-6.85***

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: PS=physical symptoms, A&I=anxiety and insomnia, SD=social disability, D=depression.

R.SS=research areas, H.R.SS=human relations areas, E.SS=emotional areas, E&C.SS=environment and culture areas.

PH.SS=physical type, PS.SS=psychological type, INS.SS=instructional type, INF.SS=informational type.

As a result, no significant difference was found in sub factors both "social disability" and "depression" of GHQ. In addition, in the total scores for SDS and GHQ, and both "physical symptoms" and "anxiety and sleeplessness" of the sub factors of GHQ, it was shown that the JLS group scores were significantly higher than the JU group. On the other hand, it was shown that the JLS group was significantly lower in total score than the JU group in the SS total score, the four areas and the four types.

SS, GHQ, SDS by multiple regression analysis

Multiple regression analysis was performed with the SS score (research area, human relations area, environment and culture area, environment and cultural area, physical type, psychological type, instructional type, and informational type) as independent variables, the GHQ score and the SDS score as dependent variables.

As a result of the entire JLS group and JU group (Table 2) in the total GHQ score, and the score for research area, emotional area, and environment and culture area had positive and significant values, the score for physical type and instructional type had negative significant values. However, no relationship with mental health was found in human relations area, psychological type and informational type.

Furthermore, as a result of the entire JLS group and JU group (Table 2) in the total SDS score, and the score for instructional type had negative significant value. There were no relationships with mental health in the research area, human relations area, environment and culture area, environment and cultural area, physical type, psychological type, and informational type.

Table2 Multiple Regression analysis for Total, JLS group and JU group

	$R^2(F)$	R.SS	H.R.SS	E.SS	E&C.SS	PH.SS	INS.SS	INF.SS
GHQ	.34 (4.05) **	.25*	.12 <i>n.s.</i>	.17 *	.35 **	-.46 ***	-.44 ***	-.18 <i>n.s.</i>
SDS	.21 (2.09) +	.20 <i>n.s.</i>	-.06 <i>n.s.</i>	.09 <i>n.s.</i>	.09 <i>n.s.</i>	-.07 <i>n.s.</i>	-.22 ⁺	-.10 <i>n.s.</i>

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Note: R.SS=research areas, H.R.SS=human relations areas, E.SS=emotional areas, E&C.SS=environment and culture areas.

PH.SS=physical type, INS.SS=instructional type, INF.SS=informational type.

In the sample of JLS, multiple regression analysis was performed with the SS score as the independent variables and the GHQ score and the SDS score as the dependent variables (Table 3).

As a result, the total GHQ score, and the score for human relationship area and environment and culture area have positive and significant values, material type, instruction type have negative and significant values. However, the score for research area, emotional area, psychological type and informational type did not show any relationship with total GHQ score.

Furthermore, as a result in total SDS score, there were no relationships between the total GHQ score with the score for research area, human relations area, emotional area, environment and cultural area, physical type, psychological type, instructional type, and informational type.

Table3 Multiple Regression analysis for JLS group

	$R^2(F)$	R.SS	H.R.SS	E.SS	E&C.SS	PH.SS	INS.SS	INF.SS
GHQ	.60 (4.54) **	.08 <i>n.s.</i>	.27**	.03 <i>n.s.</i>	.44*	-.66***	-.59**	.03 <i>n.s.</i>
SDS	.26 (1.05) <i>n.s.</i>	-.01 <i>n.s.</i>	-.02 <i>n.s.</i>	.00 <i>n.s.</i>	-.29 <i>n.s.</i>	.08 <i>n.s.</i>	.07 <i>n.s.</i>	.11 <i>n.s.</i>

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: R.SS=research areas, H.R.SS=human relations areas, E.SS=emotional areas, E&C.SS=environment and culture areas.

PH.SS=physical type, INS.SS=instructional type, INF.SS=informational type.

In the samples of JU, multiple regression analysis was performed with the SS score as the independent variables and the total GHQ score and the total SDS score as the dependent variables (Table 4).

As a result, the total GHQ score, there was no relationship between the score for research area, human relations area, emotional area, environment and cultural area, physical type, psychological type, instructional type, and informational type with the total GHQ score.

In addition, as a result in total SDS score, the score for research area has a positive significant value. However, there were no relationships with the total GHQ score in the score for research area, human relations areas, emotional area, environment and cultural area, physical type, psychological types, instructional type, and information type.

Table4 Multiple Regression analysis for JU group

	$R^2(F)$	R.SS	H.R.SS	E.SS	E&C.SS	PH.SS	INS.SS	INF.SS
GHQ	.21 (.97) <i>n.s.</i>	.14 <i>n.s.</i>	-.03 <i>n.s.</i>	.15 <i>n.s.</i>	.25 <i>n.s.</i>	-.23 <i>n.s.</i>	-.37 <i>n.s.</i>	.07 <i>n.s.</i>
SDS	.31 (1.62) <i>n.s.</i>	.34 ⁺	-.09 <i>n.s.</i>	.03 <i>n.s.</i>	.32 <i>n.s.</i>	-.21 <i>n.s.</i>	-.31 <i>n.s.</i>	-.09 <i>n.s.</i>

⁺ $p < .10$

Note: R.SS=research areas, H.R.SS=human relations areas, E.SS=emotional areas, E&C.SS=environment and culture areas.

PH.SS=physical type, INS.SS=instructional type, INF.SS=informational type.

DISCUSSION

Comparison of Japanese language school group and university group

Through this research, although it was showed that the result in GHQ and SDS was bad both in JLS group and JU group, it was suggested that the JLS group had worse mental health and depression than the JU group because the scores for the JLS group were higher in depression and mental health. The score for the JLS group was low in SS, indicating that the amount of SS obtained by the JLS group was less than that of the JU group. Therefore, it was suggested that JLS group had worse mental health and depression and less social support obtained than JU group.

In addition, the low social support may be one of the reasons for the poor mental health and depression in JLS group. Besides, I think that mental health and depression will improve if Japanese language schools get a lot of social support.

Relationship among social support with mental health and depression

Through this survey, the more social support you get, your mental health and your depression will be better. In JLS, international students who have obtained social support of physical type and instructional type have better mental health, but the mental health is worse for international students who have obtained social support for human relations, environment and culture. The social support of the human relationship area was obtained, but it is considered as the cause that mental health does not improve as follows. Japanese language schools have a variety of stresses, such as a short period of visit to Japan, lack of language skills, and restrictions requiring students to go on to study within two years. It is considered difficult to get familiar with school life and Japanese society immediately.

On the other hand, social support was not found to be related to depression, indicating that depression does not improve even if social support is obtained. Depression may be due to large biological factors. The small number of people in this survey may be one of the reasons for this result.

In consequence, maybe increase the interest of teachers in Japanese language schools and increase the appropriate social support depending on the school type could help to alleviate the current situation.

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THE INFLUENCE OF INTERCULTURAL ADAPTATION AND EMOTION ON SLEEP: AN ANALYSIS OF INTERCULTURAL ENVIRONMENT OF CHINESE INTERNATIONAL STUDENTS IN JAPAN

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ABSTRACT

The aims of this research were to investigate effects of intercultural adaptation and their affection to sleep quality. In study 1, four questionnaires (Pittsburgh Sleep Quality Index, Depression Anxiety Stress Scales twenty-one, Adolescent Self-Rating Life Events Check List, and Scale of Life Events in Interpersonal and Achievement Domains for Undergraduate Students) were used to make a survey in 111 Chinese international students in Japan (CI). An analysis of covariance revealed that CI suffering poorer sleep than Chinese and Japanese university students. By the correlation analysis, statistics indicate that the sleep quality was associated with emotion and life events. In study 2, a semi-structured interview survey was made among eight Chinese international students in Japan. According to the semi-structured interview survey, sleep and emotion of CI were both related to intercultural adaptation, especially interpersonal problems. Besides, due to their lacking of Japanese, daily communication in Japanese can also cause stress which may affect their sleep. Support for intercultural adaptation to Japan could be a key to improve CI's sleep quality. In other sides, sleep problems could be seen as useful clues to judge intercultural adaptation and some other problems.

Keyword: quality of sleep, emotion, intercultural adaptation, Chinese international students in Japan

BACKGROUND AND PURPOSE

Studying abroad is an international exchange educational program that students could have the opportunities to gain new insights and expand their horizons. It is an important way to

learn different cultures more deeply, to maintain friendships between countries and to understand globalization in the regions. Bochner (1972) mentioned three aspects of international student assignments: 1) Growth in life as a youth, 2) Achievement of study as a student, 3) Adapting to cultures and communicating their native culture.

Regarding foreign students in Japan, Moyer (1987) worried about their lives because of the unfair treatment due to the ambiguity of Japanese expressions, rejection from Japanese, deviation of values, misunderstanding of Japanese and people's preconception about Japanese as stress factors for foreign students. It is easy to imagine that foreign students would meet with many difficulties for living in such an intercultural environment.

The Ministry of Education, Culture, Sports, Science and Technology released a plan for 300,000 international students in 2008. According to the Foreign Student Enrollment Survey by Japan Student Services Organization (2019), there were 298,980 international students registered in Japan until May 1st, 2018. Among which, 279,250 were from Asia (93.4%), and 114,950 were Chinese university students, which accounted for 41.2% of Asian international students. Although there were many researches on intercultural adaptation of Chinese students in Japan, studies on sleep disorder among Chinese students in Japan were few. Sleeping disorder is a main issue among the counseling contents of foreign students in Japan, and Ohashi (2008) cited sleeping disorder as an important symptom for predicting a crisis such as suicide among foreign students in Japan. Therefore, it is important to study the adaptation problem in sleep which Chinese foreign students faced when transitioning to an intercultural environment, and the influences on mental and physical health (Wang & Matsuda, 2018).

To solve these problems, this research studied the relationship between sleep problems, emotion and stressful life events of Chinese international students in study 1. In addition, study 2 learned the relationship between Chinese students' sleep and intercultural adaptation. In study 1, we used a questionnaire survey to investigate the sleep qualities, emotion, and life events of Chinese international students. Furthermore, a comparison was undertaken among Chinese university students, Japanese university students and Chinese international students. In study 2, we used semi-structured interview survey to investigate the sleep situation and sleep rhythm problems of international students in detail, and to learn the factors that affecting the adaptation to sleep.

STUDY 1

METHODOLOGY

Participants

111 Chinese international students in Japan (CI) from the private university in Kanto region participated in the survey. They were studied by an online questionnaire collection system called Questionnaire Star. Standardized Chinese version questionnaires were prepared to all the Chinese students. And we would compare the data of CI with the data of Chinese university students (CU) and Japanese university students (JU) in literature (Wang & Matsuda, 2018).

According to the status of the questionnaire, those that less than 10 minutes answering time or no question was answered were removed, and 102 students (42 males and 60 females, average age is 23.40 years ($SD = 3.26$), effective response rate 93%) were analyzed.

Measures

Pittsburgh Sleep Quality Index ; PSQI

PSQI was a scale developed by Buysse, Reynolds, & Monk (1989) and be used worldwide. Its reliability and validity had been proved in both Chinese (Liu, Tang, & Hu, 1996) and Japanese (Doi, Minowa, Ookawa, & Uchiyama, 1998) version. This scale is used to evaluate the sleep quality in the past month. It can determine the severity of sleep disorder, and also could assess it of the general public. The higher score you get, the worse your sleeping quality is. In both the American and the Japanese versions, the clinical cut off value is score 6, but in the Chinese version, it is score 7, which means that Chinese people above 7 is recognized as sleep disorder.

Depression Anxiety Stress Scales 21; DASS-21

DASS is a scale developed by Lovibond & Lovibond (1995) to distinguish emotional disorders such as depression, anxiety and stress response. The DASS-21 is a shortened version of it. Each of the three sub-scales has seven items (21 items in total) on a range of 0: "not applicable at all" to 3: "very applicable/most applicable". The higher you score, the graver each symptom is. The Reliability and Validity of both Chinese (Gong, Xie, Xu & Luo, 2010) and Japanese (Mitani, Murakami, & Imamura, 2015) version have been proved.

Negative Life Event; NLE

Adolescent self-Rating life events check list is a scale developed by Takahira (1998) to explore both interpersonal area and achievement area life events in the field of university life. It consists of 60 items in total: 30 items for negative life events, and 30 items for positive life events. In this research, we used 30 items that asked about negative life event items (NLE). The Reliability and Validity of Chinese (Matsuda, & Liu, 2015) version have been proved. Use a "yes" or "no" scale to measure the impact of short-term life events experienced over a three-month period.

Adolescent Self-Rating Life Events Check List; ASLEC

ASLEC is a scale created by Liu, Liu, & Yang (1997). The scale has six parts: interpersonal relationship factor, learning stress factor, punishment factor, loss factor, health adjustment factor and the rest, covering 27 negative life events and rating from 1 "no impact" to 5 "very significant impact". ASLEC assesses life events within 3, 6, 9, and 12 months according to study objectives. In this research, we examined the effects of long-term life events on sleep over the past 12 months.

Statistical method

By comparing the data of CI with the data of CU and JU in literature (Wang & Matsuda, 2018), we discussed the intercultural adaptation of Chinese international students.

Ethical consideration

Out of ethical consideration, the answers are provided anonymously. All the answers would be quantified to protect personal information. Before answering, the respondents would be explained that the investigation was not mandatory, and then we began to answer with the consent of the respondents. Moreover, the questionnaire had been approved by the ethics committee of the graduate school of sociology, Toyo University (approval number: P18008).

RESULT AND DISCUSSION

The attributes of the subjects (CU, JU, and CI) were examined by a one-way analysis of variance and Bonferroni's multiple comparisons. Each means' values and the test results are shown in Table 1.

As a result, the total PSQI score for Chinese international students was higher than those of Chinese university students and Japanese university students. In terms of average sleep time, Chinese university students' was longer than Chinese international students'. On the other hand, Chinese international students' was longer than Japanese university students'. And the scores regarding stress reaction, anxiety and depression for Japanese university students were higher than Chinese international students, and Chinese international students stress reaction, anxiety and depression scores were higher than Chinese university students'. Regarding life events, the ASLEC score for Chinese international students was higher than that of Japanese university students.

And we carried out a correlation analysis of sleep, mood and life events (Table2). As a result, the PSQI score was positive correlation with the stress response. Also, the PSQI score was positive correlation with the anxiety. Furthermore, the PSQI score was positive correlation with the depression. The PSQI score was positive correlation with the ASLEC score, and the PSQI score was positive correlation with the NLE score.

Table1 Intercultural Differences in Mean Scores and Standard Deviations

	CU	JU	CI	F-value	post-hoc
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>df=2, 625</i>	comparisons
	<i>n=351</i>	<i>n=175</i>	<i>n=102</i>		
	(Wang& Matsuda , 2018)	(Wang& Matsuda , 2018)			
Average	8.11	6.61	7.40	73.22***	CU > CI > JU
sleep time	(1.26)	(1.38)	(1.57)		
Global PSQI	5.97	5.94	7.27	8.87***	CI > CU, JU
	(2.90)	(2.62)	(3.24)		
Stress	5.50	11.02	7.43	53.65 ***	JU > CI > CU
reaction	(4.17)	(8.43)	(4.75)		
Anxiety	4.34	6.26	5.64	9.90***	JU > CI > CU
	(3.62)	(6.88)	(4.38)		
Depression	4.09	11.23	6.53	83.45***	JU > CI > CU
	(3.77)	(9.21)	(5.06)		
Global ASLEC	42.27	37.07	43.41	8.90***	CI, CU > JU
	(16.64)	(9.75)	(14.80)		
Global NLE	11.05	9.93	11.69	<i>n.s.</i>	<i>n.s.</i>
	(6.90)	(6.01)	(7.07)		

*** $p < .001$

Table2 Correlation Analysis for Chinese International Students

	Global PSQI	Stress reaction	Anxiety	Depression	Global ASLEC	Global NLE
Global PSQI		.49***	.56***	.40***	.23*	.27**
Stress reaction			.84***	.82***	.67***	.46***
Anxiety				.82***	.66***	.44***
Depression					.57***	.45***
Global ASLEC						.51***
Global NLE						

* $p < .05$, ** $p < .01$, *** $p < .001$

STUDY 2

METHODOLOGY

Participants

8 Chinese students (4 males and 4 females, average age 22.38 years, SD = 1.51) from private university in Kanto region participated in the semi-structured interview survey (Table3).

Measures

Basic Information

We asked about personal attributes (gender, age and grade), Japanese language proficiency (the level of N1 is higher than N2) and learning experiences in Japanese language school.

Pittsburgh Sleep Quality Index ; PSQI

It is the same as study 1.

Depression Anxiety Stress Scales 21; DASS-21

It is the same as study 1.

Interview topics

The topics used in the semi-structured interview survey were created with reference to the topics of the most interest among the life event factors that affect the sleep of the international students pointed out in the prior literature. The interview was divided into two parts. First, Chinese foreign students were interviewed in detail about sleep status and sleep rhythm. Next, we interviewed them about their life events in Japan with topics such as family-friendship, study, university life, living environment, and so forth.

Table3 summary of interviewee

ID	Gender	age	grade	Japanese Language Proficiency	Learning experiences in Japanese language school
A	Male	21	Undergraduate first-year	N2	Yes
B	Male	21	Undergraduate first-year	N1	Yes
C	Male	24	Master's course	N2	Yes
D	Female	21	Undergraduate third-year	N1	Yes
E	Male	21	Undergraduate fourth -year	N1	No
F	Female	24	Master's course	N2	Yes
G	Female	24	Master's course	N2	Yes
H	Female	23	Master's course	N1	No

RESULT AND DISCUSSION

Regarding Japanese language ability, four of the students (A, C, F, and G) had the level of the Japanese Language Proficiency Test N2, and the other four students (B, D, E, and H) had the Japanese Language Proficiency Test N1 (Table3) . In daily life in Japan, it can be said that they have sufficient Japanese communication skills. Although all students had studied Japanese before coming to Japan, six of the students had studied at a Japanese language school in Japan. Two students graduated in Japanese language at Chinese universities and studied in Japan, then gained acceptance to enter Japanese universities directly from China.

This survey of Chinese students uncovered that they sought Japanese friends but they felt that it was difficult to make friends with Japanese people. There had few intimate Japanese friends. However, in general there is usually only a greeting level of communication amongst other Japanese that they interact on a daily basis. They mainly communicate with Chinese students in their daily lives. There are many images that Chinese students are easy to talk with, "can easily understand each other", and "have the same behavior pattern" when they are compared with Japanese students. The adaptation to Japanese society is smooth, and the support from the Japanese friends is very helpful in improving language skills.

All international students come to Japan for the purpose of studying, which can be said that they have high and positive motivation. Regarding the image of Japan, half of the respondents said that the environment (air, water, etc.) is good and they had no experience of being discriminated at present. There are many students who feel that "Japanese people are kind to foreigners". Incidentally, all Chinese international students in Japan have not received intercultural counseling. When they have a problem, they feel limited in their language expressions and think it will be difficult to understand each other's cultures, Therefore, they don't not wish to receive intercultural counseling.

CONCLUSION

This research conducted questionnaire survey in study 1 in order to study the relationship among sleep quality problems, emotion and stressful life events in Chinese international students. And the interview survey in study 2 was to explore the connection between sleep quality problems and acculturation problems of Chinese international students.

First of all, the average sleep time of Chinese international students is significantly less than the Chinese university students' because of the different cultural environment and sleep patterns. Secondly, Chinese international students' sleep quality is lower than Chinese university students' and Japanese university students'. This phenomenon may be due to the fact that necessary sleep time cannot be guaranteed in a different cultural environment, thus making sleep quality worse.

After becoming a university student, the living environment or living habits may also change. Various life events will increase, interpersonal relationships will become different from before so that emotions may also be affected. The higher the level of anxiety in university students is, the more excited the chronic nervous system becomes and the harder it is to fall asleep. This leads to poor sleep quality and the subjective feeling of insufficient sleep time. Mood is a short-term state with a high probability of change depending on life circumstances.

Overcoming interpersonal cultural differences caused by language and lifestyle can be regarded as a feature of foreign students' acculturation. In addition, foreign students have many tasks to do besides achieving academic goals, such as learning new culture and building new interpersonal relationships. You can imagine a variety of different cultural issues that can cause stress and adversely affect sleep.

Usually, during the transition to the new environment, it is believed that the formation of interpersonal relationships promotes acculturation, and the formation of interpersonal

relationship requires the local language. Many foreign students have the trouble of not being able to communicate with Japanese even after they have obtained the highest level of Japanese proficiency (N1). The higher the Japanese language proficiency is, the deeper the understanding of Japanese language and Japanese culture will be and the better they can adapt to Japan. Besides, due to lack of Japanese ability, daily communication in Japanese can also cause stress which may affect sleep.

Behind the main purpose of studying abroad, there is the problem of interpersonal relationship. Considering that understanding each other's thoughts and feelings is the condition to form an intimate interpersonal relationship, Chinese students are likely to be the first target of communication or conversation. Therefore, it can be expected that it will be difficult to form interpersonal relationship with Japanese people in different cultures. Among the psychological pressure of overseas students in Japan, interpersonal relationship is the most stressful. It can be imagined that when interpersonal communication becomes a burden, it will have a great impact on sleep.

In the stage of insufficient understanding of language or culture, distrust may occur due to insufficient understanding of the actions or intentions of people studying abroad. Therefore, the impression of the place where you study abroad may affect the formation of good interpersonal relationships. However, if the interpersonal relationship with overseas students is not properly handled, it may lead to the generation of stress.

If the intrinsic motivation as a positive motivation is high, international students will feel happy with the studying abroad life itself and the sense of adaptation will increase. Therefore, the reason for studying abroad and the goal after graduation as motivation will affect the behavior, thus affecting the formation of interpersonal relationships.

Chinese international students have a sense of resistance to intercultural psychological counseling, and they are more inclined to try to solve problems by themselves or discuss problems with students from the same country. Lack of confidence in Japanese language ability is believed to be one of the reasons why Chinese students do not like to go to intercultural psychological counseling. When encountering problems, they may feel their language expression will be limited and think it is difficult to understand each other across cultures, so they refuse intercultural consultation.

In consequence, sleep problems of Chinese international students in Japan are related to intercultural adaptation, especially interpersonal problems. Support for intercultural adaptation to Japan, especially the formation of interpersonal relationships, can be considered as a point of improvement for sleep problems. In other words, sleep problems can be seen as useful clues to intercultural adaptation and other problems to be solved.

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INTENTION TO SEEK COUNSELLING: ATTITUDE, STIGMA AND BOND IN THE RELATIONSHIP

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ABSTRACT

Counselling service emerged in the 1980's in Malaysia and counselling units are now widespread in schools, colleges and universities, but usage remains low in the country. Most students do not approach counselling service voluntarily. Some agree to counselling only after referral. Counselling service has long been associated with attitude and stigma, which may impede college students from utilizing the service, thus leaving psychological issues untreated. This may result in severe mental health issues. Once counselling is underway, counsellors have an important role to ensure that students experience a therapeutic relationship in every session. Without bond in the relationship, students may abandon or not benefit from counselling treatments. This concept paper will discuss students who attended one or more counselling sessions in order to understand the association between attitudes, stigma and the effect of bond towards intention to seek counselling. The theory of planned behavior (TPB) was used as a framework in this study.

Keywords: attitude; college students; intention to seek counselling; stigma; bond in the relationship

INTRODUCTION

Counselling is distinctive, differing from other forms of therapeutic treatment even though they all have the same function. The historical origins of various treatments differ along with their theoretical foundations. Appropriateness of treatment varies with the emotional depth and seriousness of the client's problem (Belkin, 1988). The relationship between the counsellor and the client in a counselling session is the foundation of therapeutic change (Teyber, 2000). A counsellor directly affects the activities in the counselling and influences the interaction of the counselling session.

The counselling profession has its roots from six sources: the laboratory approach that can be traced back to Wilhem Wundt in 1879; the 'talking cure' movement for the 'insane' that lead to psychoanalysis; mental hygiene movement; the mental testing movement; the influence of humanistic psychology; and the vocational guidance movement (Belkin, 1988).

Counselling service in Malaysia started in the 1980's as a result of growing drug problems in the country. The country's illicit drug problem was declared a national emergency in 1983 and the government undertook intensive efforts to solve the problem with enforcement, preventive measures and rehabilitation. As a result of Malaysia's drug rehabilitation effort, counselling began to emerge as a legitimate profession (Scorzelli, 1987).

Over the past 10 years, counselling has experienced tremendous growth in Malaysia (Ching Mey See & Kok-Mun Ng, 2010). This is reflected by the increasing attention given to mental health and counselling in printed and electronic media. With that, counselling units have become widespread in schools, colleges and universities across Malaysia. Chai Ming Sing (2000) noted that the utilisation of counselling services in the education sector was not encouraging. Although counselling is perceived as an important service by the school community, counselling services remain underutilised. The college counselling service in Hong Kong has its fair share, despite counselling being made available since the 1960's. An overview of results from several studies also suggested that the counselling service remains underutilised in China, Taiwan and North America (Busiol, 2016).

COUNSELLING UTILISATION AMONG COLLEGE STUDENTS

Mental health issues are a real phenomenon affecting young people. Issues of mental health status among the 16–24 year age group have become a major subject of investigation. A report by World Health Organization reveals that "depression is the predominant cause of illness and disability for both boys and girls aged 10 to 19 years", and suicide is within the top three causes of death among adolescents (World Health Organization Report, 2014). Generally 10% to 20% of children and adolescents globally are affected by mental disorders, half of all mental illnesses begin by the age of 14 and three-quarters by mid-20s. (World Health Organization, undated).

Meanwhile, amongst Malaysians, the prevalence of acute suicidal ideas is highest within the 16–24 age group, with 49% of Malaysian youths reported with emotional problems in year 2000, according to reports derived from The 2006 Malaysia National Health and Morbidity Survey III (WHO, 2011). A more recent report shows mental health problems between age 16 to 19 has a prevalence of 34.7%, with age 20 to 24 years at 32.1%, and 25 to 29 years at 30.5%. (National Health and Morbidity Survey, 2015).

It is clear that students face many challenges trying to balance studies and personal life. However, many college students do not seek professional psychological help when faced with such difficulties, despite the availability of the service in campus. The stigma associated with seeking help appears to be one of the reasons for this underuse (Cheng, Kwan & Sevig, 2013: 98). The behaviour of avoiding counselling treatments, when facing psychological issues, might lead to more severe psychological problems.

So far, few studies have been done in Malaysia to determine the factors that are related to psychological help-seeking among school students (Chai Ming Sing, 2000). Research on counselling process variables in the Malaysian context is sparse.

Only three relevant recent studies have been found that relates to stigma and attitude variables. Rafidah Aga Mohd Jaladin (2013) studied barriers and challenges in the practice of multicultural counselling in Malaysia and found stigma to be part of the challenges.

Salina Nen & Khairul Azmi Ibrahim (2018) conducted qualitative research on students' perceptions towards counselling services in Universiti Kebangsaan Malaysia (UKM), this study also documented stigma as one of the reasons students are not willing to seek counselling.

Benjamin Chan Yin-Fah *et al.*, (2016) studied the utilisation of counselling service among private university students. The results showed a positive relationship between attitude and intention to seek counselling, but it was not clear if the respondents had experienced any type of counselling service.

According to Ching Mey See & Kok Mun Ng (2010), counselling practice in Malaysia needs empirical findings to improve the professionalism and professionalization of the service. In general, more research needs to be done within the counselling practice in Malaysia to improve the profession. This study is designed to help address the gap by collecting data from colleges and academic institutions that offer up to diploma level certification, where the age range will usually be between 18 to 25 years old.

Up to February 2019, the Malaysian Ministry of Higher Education listed a total of 581 private colleges and academic institutions (polytechnics and community colleges, etc) that offer up to diploma level certification. The current enrolment in these institutions stands at 412,736 students (Malaysian Ministry of Higher Education, 2019).

The institutions in the study reported here are chosen based on the presence of a Certified Counsellor employed to provide counselling to the students. Samples are taken from students who have gone through at least one counselling session, to understand how bond has an effect in the relationship.

THEORY OF PLANNED BEHAVIOUR

The model of Theory of Planned Behaviour (TPB) is the basis in guiding the study of intention. Intention to seek counselling is applied within this framework, integrating three variables and one mediator to study the correlational effect towards intention to seek counselling.

TPB views intention as the key link to behaviour, but given the difficulty in assessing the actual behaviour of going to a counselling treatment, we have focused solely on intention to seek psychological help as the outcome variable. This is an accepted outcome variable in the help seeking literature (Cepeda-Benito & Short, 1998; Deane *et al.*, 2001; Courneya, Keats & Turner, 2000). TPB has a strong empirical history and is appropriate for help-seeking research (Hess & Tracey, 2013).

Although there is little research testing the link between help-seeking intention and actual behaviour, there is literature to support the link between intention and behaviour in other areas. In a large meta-analysis, Armitage & Conner (2001) reviewed 161 published studies of a variety of behaviour and found a significant relationship between intention and behaviour. Therefore, this study adopts intention to seek counselling as a proxy for actual help seeking.

INTENTION TO SEEK COUNSELLING

Counselling refers to the provision of professional assistance and guidance in resolving personal or psychological problems (Oxford Dictionary, undated). The terms 'counseling' and 'psychotherapy' are often used in referring to a helping relationship (Tantam, 2002), and this relationship is a contractual relationship based on a promise that the counsellor will be committed to helping the client.

Intention to seek counselling is described by Wade, Post, Cornish, Vogel, & Tucker (2011), as the likelihood of a person to seek counselling for an issue. Based on TPB model, there are three determinants in influencing a person's intention to seek counselling. The three determinants are behavioural belief, normative belief and control belief.

Attitude comes under behavioural belief. Attitude is what people say they will do, or plan to do or would do (Ajzen, 1988). Studies on attitude can be traced back to the early 1920s with two significant researchers from that era being Louis Thurstone and Rensis Likert. Maio & Haddock, (2015) Thurstone and Likert's research was very influential in demonstrating that attitudes can be measured.

Attitude is a unique predictor of intentions to seek help for a personal emotional problem, including suicidal thinking (Carlton & Deane, 2000). Positive attitude toward help seeking was positively related to the intention of seeking help from a general practitioner, psychiatrist, psychotherapist and family (Reynders, Molenberghs & Audenhove, 2014). A more recent study of college students showed a positive relationship between attitudes and seeking counselling, and intentions to seek counselling (Topkaya, Vogel, and Brenner, 2017).

Meanwhile, normative belief is the perceived social pressure to perform or not to perform a behaviour. This is where public stigma comes from. Corrigan (2000) explains stigma as phenomenal representations of the public's largely negative perceptions about a particular person, a social attribution collectively agreed about that person.

Self-stigma is a concept whereby an individual internalizes the external perception (Corrigan, 2004). Self-stigma is found to be inversely correlated with help-seeking intention (Vogel & Wade, 2009). The self-stigma associated with seeking psychological help is a unique predictor of help seeking intent beyond public stigma and anticipated risks and potential benefits of therapy (Vogel *et al.*, 2006). Results from a sample of college students showed that all three forms of stigma (i.e., public, social network and self) were positively associated with one another and inversely associated with attitudes toward seeking counseling (Vogel *et al.*, 2006).

BOND IN THE COUNSELLING RELATIONSHIP

Social psychologists stress that we do not live in social vacuum (Maio & Haddock, 2015: 236). Bonding is the formation of close personal attachment, especially by an infant or child with its mother (Colman, 2006). Bond in the counselling process is the feeling of attachment the client has with the counsellor. It involves four elements, namely: how the client perceives if the counsellor likes, respects, appreciates and cares for them.

Clients' bond perception is deemed to be significant in early phase of counselling (Kokotovic, A. M., & Tracey, T. J. (1990), the sense of connection is part of us as human beings, as has been explained by Abraham Maslow's hierarchy of needs.

The results of a study by Vogel *et al.* (2006) indicate that, of the numerous process variables considered, perceptions of session depth and the working alliance–bond were most strongly related to a reduction in self-stigma. Through trust and belief in the counsellor and the process of counselling, self-stigma for seeking help may be diminished as clients see the potential benefits to themselves (Wade *et al.*, 2011). Bond element has also been found to be a strong variable in reducing self-stigma for seeking help among group counselling participants (Wade *et al.*, 2011).

The development of a strong working alliance with the counsellor should thus lead to a reduction in concerns by the client that counselling could lead to feeling worse or will reduce confidence and self-esteem.

MEASURES

Attitude. Attitudes Toward Seeking Professional Psychological Help Scale (ATSPPHS). General attitudes about seeking professional psychological are measured by the 10 positively and negatively phrased items of the questionnaire. This scale has 10 items that are answered on a 4-point scale with responses ranging from 0 (disagree) to 3 (agree), and five items are reverse-scored so that higher scores indicate more positive attitudes. Psychometric problems led to the development of the 10-item short form by Farina & Fisher, (1995) in (Hammer, Parent and Spiker, 2018). ATSPPH-SF' is also found to have both reliability and validity, in samples among college students (Elhai, Schweinle, and Anderson, 2008).

Public Stigma. Public stigma will be measured with the Perception of Stigmatization by others for Seeking Help (PSOSH) developed by Vogel, Wade & Ascherman (2009), has 5 items. PSOSH with seeking counselling has showed good internal consistency and test-retest estimates, and is suitable for data analysis among college students (Vogel & Wade, 2009).

Self-Stigma. The Self Stigma of Seeking Help Scale (SSOSH) developed by Vogel, Wade and Shawn (2006) is a 10-item self-administered questionnaire. It is a 5-Likert scale questionnaire ranging from Strongly Disagree to Strongly Agree. Scale scores range from 10 to 50, with higher scores indicating greater self-stigma. SSOSH scale has indicated positive association to assess stigma of seeking counselling amongst undergraduate (Vogel *et al.*, 2006) and has shown high internal consistency.

Working Alliance Bond. The Bond subscale of the Working Alliance Inventory—Short Form (WAI–Short; Tracey & Kokotovic, 1989) is used to measure participants' perceptions of the bond developed with the counsellor. The Task and Goal subscales were excluded from this study because it may not be relevant to participants who attended only one session. The Bond subscale has shown greater reduction in self-stigma in a sample of undergraduates students (Wade *et al.*, 2011). It has also shown internal consistency among participants who received one individual counselling session conducted at a university counselling centre (Tracey & Kokotovic, 1989).

Intention to Seek Counselling. Intention to Seek Counselling Inventory (ISCI).

The ISCI items were originally developed by Cash, Begley, McCown, and Weise (1975) to measure respondents' expectancies of a counsellor's helpfulness (Hammer & Spiker, 2018). From 15 list of items, 17 list of concerns were then developed by Cepeda-Benito and Short (1998), each of which involves problem college students often bring to counselling (Cepeda-Benito & Short, 1998). All scores demonstrated evidence of internal consistency for subscales of interpersonal problems, drug issues, academic issues and psychological issues (Hammer & Spiker, 2018).

CONCLUSION

This concept paper explores the role of stigma, attitude and bond in the counselling process. The counselling process needs more empirical data to contribute to the understanding on bond variable that has been identified as being important in counselling. Some literature have discussed on pre mature termination of the counselling relationship. The key may well be that an adequate working alliance is built within the first few session. With the raising number of certified counsellors in Malaysia, and the mental health awareness programme being a yearly focus by the Health Ministry of Malaysia, academic institutions are beginning to engage counsellor to help students go through their college life. College students are encouraged to address their worries by meeting their college counsellor. It may help in reducing the institutions' attrition rate, but in the long run untreated emotional issues may become severe without treatment.

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CHARACTERISTICS OF STAGES OF HELP-SEEKING BEHAVIOR TO PSYCHOSOCIAL SUPPORT SERVICES AMONG JAPANESE CANCER PATIENTS

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ABSTRACT

To investigate the characteristics of the stages of help-seeking behavior to psychosocial support services, we compared cancer patients' demographic information, distress and worries, social support, psychological characteristics, and acceptance of a recommendation for psychosocial support services, between the stages set according to a transtheoretical model. We conducted an Internet survey among cancer outpatients ($N = 643$), and asked them to respond to a questionnaire. We asked about demographic information, use of psychosocial support services, whether they received recommendations from others, attitude toward using psychosocial support services, personality, social support, BCWI, and HADS. As a result of one-way variance analysis variance and chi-square tests, significant differences were found at each variable among the stages. For example, there were more females than males among users; positive outcome expectations in user attitudes were significantly higher than those in non-utilization stages ($p < .05$). This study revealed that the characteristics of each stage—precontemplation without adjustment disorder or major depression, precontemplation with adjustment disorder or major depression, contemplation, and users—all differed from one another. We should develop approaches to promote its use based on these differences.

Keyword: cancer patients, help-seeking behavior, psychosocial support, support use

INTRODUCTION

Many cancer patients suffer from psychological distress after being diagnosed (e.g., Dunn et al., 2013). One study reported that around 10% of cancer patients have major depression (Walker et al., 2014). To reduce psychological distress, therefore, various psychological support services, including psychiatric care, counseling, group therapy, support group, and consulting support centers are available for cancer patients these days. However, the utilization rate of such services is low in Japan (over 10% of the cancer patients using psychiatry or psychosomatic medicine services; e.g., Matsushita et al., 2010) compared with in the Western countries (nearly 30% of the cancer patients using mental health services; e.g., Forsythe et al., 2013). This situation is called a "service gap" (Stefl & Proserpi, 1985). Methods to reduce this gap have been studied in the field of help-seeking behavior (HSB).

LITERATURE REVIEW

Among those mentioned as theories applicable to the HSB field, we focus on the transtheoretical model (TTM; Prochaska et al., 1992) which is a behavioral change theory. In TTM (Prochaska et al., 1992), behavior change is classified into six stages based on behavior intention, readiness, and implementation situation. For example, in the precontemplation stage, the person is not aware of their problem and has no intention to act, but people around them are aware of the problem. In the contemplation stage, the person is aware of the existence of their problem and is serious about overcoming it but has not decided to convert the intention to implementation. Additionally, the stage-up method differs depending on which stage the target person is in. The appropriateness of the interventions depends on the stage the person is in. Although previous research found that a lot of factors contribute to encourage usage of psychosocial support services among cancer patients (e.g., Matsui & Taku, 2016), these studies did not consider the stages.

In this study, we try to understand the characteristics of the stages of HSB in psychosocial support services, to develop an effective intervention approach. Therefore, we compared cancer patients' demographic information, distress and worries, social support, psychological characteristics, and acceptance of a recommendation for psychosocial support services, between the stages. The following stages were set according to a TTM (Prochaska et al., 1992) and Matsui (2017): precontemplation without adjustment disorder or major depression (w/o ADMD); precontemplation with adjustment disorder or major depression (w/ ADMD); contemplation; and psychosocial support service users.

METHODOLOGY

We conducted an Internet survey among cancer outpatients. After the screening test, the ones who met the inclusion criterion were asked to respond to a questionnaire through INTAGE HOLDINGS Inc. Participants were asked about demographic information, information on use of psychosocial support services, acceptance of a recommendation for psychosocial

support services from others, attitude toward using psychosocial support services for cancer patients (Expectations for positive results after using, subjective norms, resistance to stigma, concerns about negative results after use, resistance to help-seeking; Matsui, 2017), Ten Item Personality Inventory (TIPI-J; Oshio et al., 2012), the Japanese version of revised Life Orientation Test (Sakamoto & Tanaka, 2002), Brief Cancer-Related Worry Inventory (BCWI; Hirai et al., 2008), Hospital Anxiety and Depression Scale (HADS ;Zigmond & Snaith, 1983) and social support (emotional support :3 items from Cancer-Specific Geriatric Assessment; instrumental support :2 items from National Survey of the Japanese Elderly).

RESULT

Numbers responded were 643 who corresponded to precontemplation (w/o ADMD), precontemplation (w/ ADMD), contemplation, and psychosocial support service users. As a result of one-way variance analysis variance and chi-square tests, significant differences were found at each variable among the stages. For example, there were more females than males among users; positive outcome expectations in user attitudes were significantly higher than those in non-utilization stages ($p < .05$); and no significant differences were found among the other non-utilization stages (*n. s.*). Overall, there was a tendency to accept the recommendation of psychosocial support services from medical staff rather than from family members. Additionally, in both cases, there were fewer respondents in the precontemplation (w/o ADMD), who would use it when advised; there were more respondents in contemplation stages said would use it ($p < .05$).

	All □ N = 643		10 Precontemplation (w/o ADMD) □ N = 350		20 Precontemplation (w/ ADMD) □ N = 188		30 Contemplation □ N = 62		40 Users □ N = 43		F / χ^2	P	Tukey's HSD Test □ 5% α	
	Mean / N	SD / %	Mean / N	SD / %	Mean / N	SD / %	Mean / N	SD / %	Mean / N	SD / %				
Age	58.2	11.8	60.0	11.3	58.1	11.4	54.6	14.3	48.8	8.3	14.584	.000 ***	3), 4) < 1) 4) < 2)	
Sex														
Males	321	49.9	189	54.0	93	49.5	30	48.4	9	20.9	16.859	.001 **		
Females	322	50.1	161	46.0	95	50.5	32	51.6	34	79.1				
BCWI														
All	619.7	327.3	448.7	261.9	759.5	248.6	963.5	280.9	905.1	297.9	119.698	.000 ***	1) < 2) < 3), 4)	
Future prospects	285.2	146.4	212.2	121.1	345.3	115.2	429.0	123.9	409.5	132.4	103.233	.000 ***	1) < 2) < 3), 4)	
Physical and symptomatic problems	138.8	93.5	95.4	73.5	170.4	83.3	228.5	84.0	224.0	90.7	89.167	.000 ***	1) < 2) < 3), 4)	
Social and interpersonal problems	195.7	114.7	141.1	95.3	243.8	93.5	306.0	104.7	271.6	108.4	88.484	.000 ***	1) < 2) < 3) 1) < 4)	
HADS														
All	10.2	7.6	4.5	3.0	16.1	3.9	18.9	6.2	17.5	9.4	44.162	.000 ***	1) < 2) < 3) 1) < 4)	
Anxiety	5.1	3.9	2.5	2.0	7.7	2.3	9.7	3.6	8.7	4.3	296.211	.000 ***	1) < 2) < 3) 1) < 4)	
Depression	5.0	4.3	2.0	1.8	8.4	2.7	9.3	3.6	8.8	5.7	323.091	.000 ***	1) < 2), 3), 4)	
Social support														
All	8.6	5.9	9.8	6.1	7.3	5.3	6.2	4.8	9.0	5.4	11.609	.000 ***	2), 3), < 1)	
Instrumental support	3.0	2.5	3.4	2.6	2.6	2.3	2.1	1.8	2.9	2.4	7.796	.000 ***	2), 3), < 1)	
Emotional support	5.7	3.9	6.4	4.0	4.8	3.5	4.1	3.6	6.0	3.4	11.375	.000 ***	2), 3) < 1) 3) < 4)	
Attitude toward using psychosocial support services for cancer patients														
Expectations for positive results after using	33.4	5.1	33.5	4.9	32.7	4.8	33.5	5.9	36.3	6.0	6.124	.000 ***	1), 2), 3) < 4)	
Subjective norms	10.4	2.9	9.7	2.8	10.5	2.6	11.6	2.4	13.2	3.0	26.116	.000 ***	1) < 2) < 3) < 4)	
Resistance to stigma	11.2	3.4	10.5	3.1	11.9	3.1	12.5	3.9	11.8	4.3	12.555	.000 ***	1) < 2), 3)	
Concerns about negative results after use	19.7	4.4	18.5	4.1	21.1	3.8	22.2	4.7	19.1	4.9	25.163	.000 ***	1), 4) < 2), 3)	
Resistance to help-seeking	15.4	4.2	14.7	3.8	17.0	3.8	16.6	4.9	12.9	4.5	20.764	.000 ***	4) < 1) < 2), 3)	
Personality														
Extraversion	8.0	2.4	8.4	2.3	7.5	2.1	7.0	2.9	7.3	2.7	11.472	.000 ***	2), 3), 4) < 1)	
Agreeableness	9.8	1.9	10.1	1.8	9.4	1.9	9.5	1.8	9.7	2.4	6.402	.000 ***	20 < 1)	
Conscientiousness	8.7	2.2	9.1	2.0	8.4	2.2	8.3	2.6	8.1	2.7	6.324	.000 ***	2), 4) < 1)	
Openness	8.2	2.0	8.5	2.0	7.8	1.8	7.9	2.3	8.3	2.5	5.530	.000 ***	2) < 1)	
Neuroticism	7.4	2.3	6.5	1.9	8.0	2.0	9.3	2.3	9.3	2.8	58.971	.001 **	1) < 2) < 3), 4)	
Optimism	12.7	2.9	13.6	2.4	11.9	2.7	10.9	3.2	10.8	3.3	37.429	.000 ***	2), 3), 4) < 1)	
Pessimism	12.2	2.7	11.3	2.4	13.0	2.5	13.7	2.8	13.6	3.4	32.475	.000 ***	1) < 2), 3), 4)	
Acceptance of a recommendation for psychosocial support services														
All	360	60.0	189	54.0	121	64.4	50	80.6	-	-	17.751	.000 ***		
From medical staff	Yes	360	60.0	189	54.0	121	64.4	50	80.6	-	-	17.751	.000 ***	
From family members	Yes	240	40.0	161	46.0	67	35.6	12	19.4	-	-	9.451	.009 **	
	No	322	53.7	175	50.0	103	54.8	44	71.0	-	-			
	No	278	46.3	175	50.0	85	45.2	18	29.0	-	-			

*** $p < 0.001$, ** $p < 0.01$

DISCUSSION

Participants in the contemplation stage and users were younger than those in the precontemplation stage, and there were more women in the user stage. Females were reported to have higher psychological distress than males and those under the age of 65 are more likely to seek help than those over 65 (Clark et al., 2016), and males have a tendency

to underestimate stress (Izawa et al., 2013). Our results of BCWI and HADS mostly support previous research on the effect of degree of problem recognition effect on the intention or utilization (e.g., Steginga et al., 2008). However, the trend is different with respect to social and interpersonal problems of BCWI. It can therefore be said that it is necessary to consider not only the high awareness of problem but also the difference in the content of the problem. With regard to HADS (anxiety), contemplation group is significantly higher than precontemplation (w/ ADMD) group. Hence, it is suggested that if anxiety is stronger, cancer patients may move to a stage where they consider using psychosocial support services. Compared to precontemplation (w/o ADMD), people in precontemplation (w/ ADMD) and contemplation stages have more problems, psychological distress, and limited support from the environment, making it difficult to solve their problems. As for the attitude towards using of psychosocial support services for cancer patients, it was difficult to strictly compare, but the two positive directionality factors are similar to the previous research. The three negative factors are high in precontemplation (w/ ADMD) and contemplation, and it is necessary to reduce these attitudes. Additionally, based on the tendency of personality traits, people in precontemplation (w/o ADMD) have less problems and can adaptively cope with them. However, those who are in the precontemplation stage (w/ ADMD) or in the contemplation stage are more prone to problems and cannot take adaptively cope with them, so they would keep burden. It was suggested that recommendations for using psychosocial support services from medical staff would be effective.

CONCLUSION

This study revealed that the characteristics of each stage—precontemplation without adjustment disorder or major depression, precontemplation with adjustment disorder or major depression, contemplation, and users—all differed from one another. We should develop approaches to promote its use based on these differences. These findings will be used as preliminary data to help develop an intervention method to promote the use of psychosocial support services among cancer patients.

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POSITIVE PSYCHOLOGICAL INFLUENCES ON NORMALLY DEVELOPING SIBLINGS WHO HAVE DISABLED BRETHERN

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ABSTRACT

This study was conducted to explore positive psychological growth in normally developing children who have disabled brothers and/or sisters in their family. Having brother and/or sisters with special needs may play an important role in psychological development on normally developing siblings. Despite the fact that most studies have focused negative psychological influence, Hirakawa (1986) demonstrated positive psychological growth such as "being sensitive to prejudice", "understanding the blessings of their health", and "being patient and merciful". In this study, 46 parents and 35 normally developed siblings were asked to complete questionnaires, including disability acceptance scale developed by Isimoto et al. (2008), resilience scale developed by Oshio et al. (2002), and post traumatic growth inventory (PTGI) (Taku et al., 2007). Results showed that "novel thinking", subscale of resilience was significantly higher in siblings with severely disabled children than siblings with mild to moderate disabled children. Also, a significant relationship was found between "spiritual and cognitive modification", construct of PTG in siblings and "acceptance of disability" in parents. These results suggest that parental "acceptance disability" may have a key role to experience positive psychological growth on siblings who have disabled brothers and/or sisters.

Keyword: siblings, brethren, resilience, PTGI, disability acceptance

INTRODUCTION

The fact that having sisters and/or brothers who have disabilities is a stressful event for normally developing children. To date, much research has been conducted on support for normally developing siblings (hereinafter referred to as siblings) who have sisters and/or brothers who have disabilities growing with them. Most these studies are focusing to understand type and the level of stress that siblings are having and how they are managing the stress and accept the reality. Factors that cause negative impact on the growth process in siblings include "type of disability" and "degree" on the disabled child side, "age difference with disabled child", and "individual differences such as adaptability to stress". These stressful events experienced by siblings may evoke them to have negative emotions and cause them to feel a social stigma. Many siblings are reported to have a high frequency of maladaptive behaviors and maladaptive symptoms (Breslau, 1981; Tew, 1973). Recently, however, siblings may also be able to have positive influences on their growth process with their handicapped brothers and/or sisters. The purpose of this study was to find out what types of positive growth effects in parental disability acceptance about disabled children. Also, the influence of parental disability acceptance on the development and growth in siblings was assessed from the point of view in resilience and post traumatic psychological growth.

LITERATURE REVIEW

Studies of the positive effects seen in the developmental process of siblings may be related to Post Traumatic Growth (PTG) demonstrated by Tedeschi & Calhoun (1996). Post traumatic growth inventory (PTGI) was developed to assess positive change resulting from the struggle with trauma to children who experienced hurricane and the subsequent flooding. Taku et al (2007) created Japanese version of the Posttraumatic Growth Inventory (PTGI-J). PTGI-J include four domains: relating to others, new possibilities, personal strength, spiritual change and appreciation of life. In recent years, the research on siblings of handicapped children has reported positive aspects such as strengths and resilience of individuals promoted by overcoming stress from the negative viewpoints such as stigma and acceptance of disorders. Hirakawa (1986) have demonstrated that the positive impact of children with disabilities came to various experiences, including "sensitive to prejudice", "understanding the merits of one's own health", and "patiently and merciful" Factors related to the adaptation of the siblings to stigma and acceptance of disorders may be affected by parental. These factors may be the level of parental accepting the disorder, and also, description of the disorder to the siblings. Further, factors that may promote positive impacts on siblings include "degree of disability" and "degree of acceptance of parents" (Takase and Inoue, 2007). Finally, "nurturing ability", "support system for nurturing", "acceptance of disability" (Hirakawa, 1986) may be the factors to be considered for promoting psychological growth in siblings. In particular, there is a wide variety of caregivers' acceptance of disability research. Ishimoto and Tai (2008) believe that mothers' acceptance of disability can be represented by, for example, "I think disability is one individuality", "I think that this child has been born by choosing us", "It is fun to raise a child". As such, mother's attitude of acceptance of the disorder is considered to have a great influence on the interaction with the disabled child for the siblings who observe and model the parental

acceptance of the disorder. The researchers also found that siblings' attitude to accept disability supports the mother's acceptance of disorder.

METHODOLOGY

A questionnaire survey was conducted on 35 siblings (16 men, 19 women, averaged age 16.66 years old, $SD=5.61$) who were attending special need elementary school, middle school, and high school students and their 46 parents in Osaka Prefecture. Question items to parents include, individual attributes of children with disabilities, the type of disability, the degree of disability, and level of acceptance (Yoshida, 2006: 8 items 5 method), disability acceptance scale (Ishimoto et al., 2008: 4 items 5 method). Question items to siblings composed of the individual attributes of the brotherhood and the resilience scale, (Oshio et al., 2002: 21 item 5 method), and PTGI-J (Taku, 2007: 21 item 5 method). We examined the level of disability of children and factors that have influences on parental acceptance were analysed. Then, type of parental acceptance influence on siblings' resilience, posttraumatic growth and the relationships among parents acceptance, and siblings' resilience and post traumatic growth were analyzed.

RESULT

Types of disability were 32 intellectual disability (69.6%), 17 physical disability (37.0%), and 9 with autism (including tendency) (19.6%) and other disabilities. As for parental acceptance, an average score of "feeling that they are growing together", "I think the child's growing process is fun for parents", "the child was born selecting us as parents", and "I think that disability is one personality for children" were 3.91 ($SD = 1.10$), 3.62 ($SD = 1.32$), and $M=3.44$, $SD=1.59$), respectively. To examine the impact of having disabled brothers/sisters in resilience and PTG, siblings were divided into 22 who have disabled sisters/brothers severely and 12 mild-light disabled sisters/brother. As for resilience, siblings with severely disabled sisters and/or brothers showed significantly higher scores in "new and challenging thoughts" compared to mild-light group ($t = 1.99$, $p < .05$). There were no significant difference were found in any of PTGI's, such as "mental and cognitive changes", "discovery of new possibilities", "change in values" and "rediscovery of self". Correlation analysis was performed to clarify relations between parental acceptance level and, siblings' resilience or PTG. Results showed that the scores of siblings whose parents think that "I think that disability is one personality for children" were significantly related to siblings' PTGI "mental and cognitive changes" ($r=.48$, $p<.01$).

DISCUSSION & CONCLUSION

In this study, we aimed to examine types of positive parental acceptance of disability and its influence for siblings who have disabled brothers and/or sisters on PTG and resilience. Thus, the level of disability acceptance "I think the process of raising a child is fun for parents" by parents was shown to be significantly higher in moderate-to-light than in parents with severe

levels. From this, the degree of the child's disability is a major factor in the tolerance of the parent's disability, and the milder the degree of the disability, the parent feels that the child's growth can be enjoyed, thus facilitating acceptance of the disorder. is expected. Nevertheless, result of sibling resiliency in the degree of disability was significantly higher in "novel thinking" in siblings with severely disabled children. This may be due to the more severe the disability, the more likely the brethren will need to try various ideas to support their siblings in their daily lives. Also, it may be possible that parents with severely disabled children may be more careful in caring and involvement than those with mildly disabled children. Having grown up looking at the generous care provided by their parents, siblings may increase the level of creativity in things and challenging something difference. There was no difference according to the degree of injury in PTG. An psychological growth in PTG may be characteristically different from siblings' experience living with disabled sisters and/or brothers.

As for relationships among parental acceptance, resilience and PTG, "I think that disability is one personality for children and "mental and cognitive changes" was found to be significant. No other effects were found. These results suggest that the perception of impairment in parental acceptance affects siblings' flexible thinking and psychological growth. If siblings can view the disorder as personality, they will not feel that it is a stigma in process of growth. So, they can understand the behavior specific to the personality and will not give up on helping sisters and/or brothers without hesitantly. As a result, siblings will try to challenge various way in supporting their sisters and/or brothers. It may also act as a factor to increase parents' acceptance of disability and, as a result, leading positive growth in siblings.

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POSITIVE PSYCHOLOGY INTERVENTION WITH THE STRENGTHS WORKSHEETS TARGETING ELEMENTARY SCHOOL CHILDREN

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ABSTRACT

The aim of the current study was to examine the effectiveness of positive psychological intervention with positive psychology worksheets consisting of nine elements: reflecting on good things, finding your own strengths, finding others' strengths, enhancing your own strengths, expressing gratitude, becoming positive, demonstrating enthusiasm, identifying what you want to do best, and engaging in a total internal reflection (review). The worksheets were administered to 572 students from grades 1 through 6 (elementary school). We obtained measurements with the *Children's Version of the Strengths Knowledge Scale*, *Children's Version of the Strengths Use Scale*, *School Engagement Scale*, and *Stress Response Scale for Children (SRS-C)* before and after intervention. As a result of *t*-tests—although strengths knowledge did not increase significantly—the average score increased about one point for students in first and third grades. The average score for strengths use also increased significantly in third grade and trended significantly in first grade. The stress score decreased in the lower grades. Although inconsistent experimental results were identified depending on students' grade levels, overall, this study shed light on the effectiveness of positive psychological treatments during early childcare and educational settings.

Keyword: strengths knowledge, strengths use, school engagement, stress, elementary school

INTRODUCTION

Presently, various educational issues related to children—such as truancy, bullying, violence, lack of socialization, diminishing interest in studying, and poor lifestyle habits—have been seen in elementary school settings. Therefore, approaches for resolving these issues and caring for injured children are necessary. At the same time, it is necessary to focus on the internal factors causing such problems and enhance coping capacities.

LITERATURE REVIEW

For the solution to internal factors associated with the aforementioned issues, the study of strengths in the discipline of positive psychology is attracting attention. In their study, Quinlan,

Swain, Cameron, and Vella-Brodrick (2015) conducted a six-session program for children aged 9-12 years, and intervention group participants scored significantly higher on class cohesion and relatedness need satisfaction and lower on class friction than the non-randomized control group. Program participants also reported higher levels of positive effects, classroom engagement, autonomy, need satisfaction, and strengths use.

"Character strengths" are defined as "positive traits reflected in thoughts, feelings, and behaviors" (Park, Peterson, & Seligman, 2004) and "characteristics that allow a person to perform well or at their personal best" (Wood, Linley, Maltby, Kashdan, & Hurling, 2011).

The aim of this study was to examine effects on school engagement and stress response by developing recognition and strengths use (strong or good points) among schoolchildren. We hypothesized that the following effects would be seen from our intervention: recognition and reinforcement of strengths and their use, enhanced engagement in school, and a reduction in stress responses.

METHODOLOGY

Participants

The participants were 572 elementary school students first through sixth grades at A elementary school in Tokyo.

Procedures

The study period was between October 2018 to March 2019. The participants were asked to complete questionnaires disseminated to them before and after intervention. We conducted strengths worksheet activities as an intervention. The nine worksheets covered the following: reflecting on good things, finding your own strengths, finding others' strengths, enhancing your own strengths, expressing gratitude, becoming positive, demonstrating enthusiasm, identifying what you want to do best, and engaging in total internal reflection (review). The strengths worksheets activities accompanied school activities, such as musicals or regular classroom activities.

Measures

Demographic information obtained included grade, class, and name.

Children's Version of the Strengths Knowledge Scale (Oguni & Otake, 2017) consists of eight items, such as "I know my good points" or "the people around me know my good points." Strengths of children were assessed with a 5-point Likert scale, from *1, not at all* to *5, very true*.

Children's Version of the Strengths Use Scale (Oguni & Otake, 2017) consists of 14 items, such as "I always make use of my good points" or "I always intend to make use of my good points," with the 5-point Likert scale (i.e., *1, not at all* to *5, very true*).

School Engagement Scale (Takenaka et al., 2019) consists of 14 items followed by three lower factors, which include emotional engagement ("I like to be at school"), behavioral engagement ("I talk to people outside of school about what I learned in class"), and cognitive engagement ("I always concentrate on my studies"). Again, the 5-point Likert scale (*1, not at all* to *5, very true*) was used. For participants first through third grades, however, behavioral engagement and cognitive engagement on the School Engagement Scale were not evaluated based on consideration regarding the psychological burden.

Stress Response Scale for Children (SRS-C) (Shimada, Togasaki, & Sakano, 1994) consists of 20 items followed by the four lower factors: physical states (e.g., "I have a headache"), depressive-anxious feelings (e.g., "I feel lonely"), irritated-angry feelings (e.g., "I am

irritated”), and helplessness (e.g., “I cannot do my best”). The same 5-point Likert scale described above was used.

RESULT

Participants were 106 first graders, 96 second graders, 91 third graders, 105 fourth graders, 86 fifth graders, and 88 sixth graders.

Paired *t*-tests were conducted for each grade to examine the effects of intervention. The results showed that there were significant differences in strengths use ($t(77)=-1.41, p<.10$), physical states ($t(92)=2.45, p<.05$), depressive-anxious feelings ($t(88)=5.25, p<.01$), irritated-angry feelings ($t(91)=5.53, p<.01$), and helplessness ($t(87)=3.11, p<.01$) among participating first grade students. Significant differences in physical states ($t(82)=2.48, p<.05$), depressive-anxious feelings ($t(80)=2.30, p<.05$), irritated-angry feelings, ($t(84)=2.23, p<.05$), and helplessness, ($t(81)=1.69, p<.10$) were found among second graders. For third graders, significant differences were noted in strengths use ($t(60)=-2.05, p<.05$), physical states ($t(81)=4.36, p<.01$), depressive-anxious feelings ($t(80)=2.27, p<.05$), and helplessness ($t(80)=2.35, p<.05$). For fourth grade students, significant differences were observed for emotional engagement ($t(83)=2.31, p<.05$) and behavioral engagement ($t(84)=2.06, p<.05$). Significant differences in strengths use ($t(77)=1.99, p<.05$), emotional engagement ($t(77)=2.00, p<.05$), behavioral engagement ($t(80)=-4.76, p<.01$), and cognitive engagement ($t(77)=-5.31, p<.01$) were observed among fifth grade students. For sixth graders, significant differences were observed in physical states ($t(71)=2.34, p<.05$) and helplessness ($t(76)=2.20, p<.05$). For strengths knowledge, there was not a statistically significant result for any grade (*n. s.*).

DISCUSSION

The effects of strengths intervention on strengths knowledge and use, school engagement, and stress response were examined in this study. Although results for strengths knowledge were not statistically significant, the average score increased in first and third grades. In addition, strengths use also increased among first and third graders. These findings suggest that intervention with positive education in first and third graders would be most effective. The stress response decreased mainly in the lower grades. As for investigations for students aged 12-19, positive emotions decreased with age (Burke & Minton, 2019). The differences in well-being based on age may be reflected in the different results seen in this study for lower and upper grades. In addition, negative emotions have been reported to increase with age (Burke & Minton, 2019); it seems that there were no differences in the upper grades because students in those grades are more susceptible to negative effects.

CONCLUSION

It is suggested that strengths intervention has some effect at every grade level, but it is most effective when implemented in a younger grade. I performed the same intervention for all grade levels, but I would like to see an intervention developed for the upper grades.

Later, I envision introducing ICT that spreads throughout a school, along with consideration regarding intervention.

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PRELIMINARY RESEARCH ON TEACHING EFFECTIVENESS USING STRUCTURAL MANUALS : PROMOTING EDUCATIONAL SUPPORT TO EXPERTS USING AI

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ABSTRACT

Training of support specialists is essential for promoting healthy quality of life (QOL) of the elderly. However, the number of specialists for elderly support is insufficient. In order to foster experts to improve the quality of care provided by specialists, it is desirable to develop an education system that is easy for beginners to understand and which promotes their professional development. Therefore, we devised an easy to comprehend operation manual for beginners who tend to solve problems by finding a strategy based on the purpose. This study aimed to examine the possible educational effects of training care staff using structured work manuals related to care services. We selected two caregivers as participants. We picked out frequently performed tasks from the structured manuals of care services, conducted training for an hour, and interviewed participants individually before and after training. We conducted an analysis using the grounded theory approach and investigated for changes in awareness of the task. It was seen that there was an increase in expressions associated with the purpose of their actions. It was assumed that they began to notice the purpose of their actions.

Keyword: training system, structural manuals, experts, artificial Intelligence

INTRODUCTION

Training of support specialists is essential to ensure healthy quality of life (QOL) of the elderly. In Japan, strategic development of "human resources" is required, such as securing and bring up qualified and able care workers who provide quality care services and improving the quality of provided services. In order to support dignified and independent daily life of the elderly and the disabled, it is necessary for caregivers who support them to have at least a minimum of necessary basic knowledge and skills about care. There are no systems where beginners in nursing care can efficiently learn basic care methods such as guidance during movement to the bathroom, removal of clothes, basic understanding of dementia, emergency response methods, etc. If such a system is developed, the number of people who can support it appropriately will increase, and it is thought that the QOL of elderly people and people with disabilities will then improve. In order to foster experts, it is desirable to develop an education system that is easy for beginners to understand and that further promotes professional development. Hence, we are developing a system to present it to beginners in an easy-to-understand manner. The purpose of this study is to examine in advance the educational effects of training caregiving staff using structured work manuals on care (Nishimura, 2018).

LITERATURE REVIEW

Skill acquisition in care is achieved by "observational learning" in practice. Bandura (2001) identified four conditions necessary for establishment of observational learning: (1) Pay attention to the behavior of the model and observe the results, (2) Remember what you have observed, (3) Have the ability reproduce the behavior, and (4) Be motivated. Additionally, Bandura (2001) stated the need for the ability to imagine and predict. Indicating the purpose of each act of care and presenting it so that the whole picture of the act can be understood is thought to enhance the ability of imagination and prediction at the care site and to promote observational learning. Furthermore, experts tend to infer forward from the information given in the problem, while beginners tend to infer backward (Larkin et al., 1980; Patel & Groen, 1986). Therefore, for beginners, it is considered effective to present the problem to be solved, and to execute notation in a goal-oriented manner. An effective partnership between education and practice brings mutual benefits. As students learn and acquire more knowledge, their awareness and sensitivity to the needs of the elderly would increase (A. Suikkala et al., 2016)

METHODOLOGY

Two caregivers who had three years and twenty years of care experience, respectively.

- First, we conducted a 30-minute survey using a semi-structured interview with each participant individually regarding the nursing task "taking a bath." The following six questions were asked. 1. What kind of tasks does this work involve? 2. What is the reason

for doing this work? 3. Do you feel that this task is difficult? At what point is it so? 4. What do you think would happen if a "hiyari-hat" (It means a dangerous event that may have developed into a serious accident.) happens in this work? 5. What precautions do you take when communicating instructions with someone? 6. How do you teach a new worker this work?

- After the survey interview, we conducted a study session using one of the structured manuals (Nishimura, 2018) (A), in which the knowledge of "taking a bath" was structured.
- We then asked subjects to work for a week, keeping in mind the structured manual after which we conducted a semi-structured interview with the same content.

Based on "grounded theory," we extracted data from the content, labeled it, encoded it, encoded similar labels, created categories, gave them appropriate names, and classified phenomena. A comparison was made of responses before and after the study session.

RESULT

Referring to the care services involved with "taking a bath," the participant with 3 years of experience added 1 item in Q1 and 4 items in Q2. Although the number of categories did not increase in the responses of the participant who had 3 years of experience, a larger framework was extracted from the content. About 5, "the difficult thing", the concept which was overwhelmed by both was extracted. (Details of the results will be presented at the poster presentation)

DISCUSSION

In the caregiver with 3 years of experience, a change was seen in the content of answers to the first and second questions. No change was seen in the 20-years experienced caregiver. Based on Larkin et al. (1980), we believe that learning with a goal-oriented knowledge structured manual may be a better learning method for beginners. On the other hand, in the category which pointed out the difficult point, the concept of a bigger viewpoint was extracted from the text of both caregivers. As a result of learning using the goal-oriented knowledge structured care manual, more categories were extracted in the less experienced caregiver. The viewpoint on work became larger in both caregivers, and the concept that captured the purpose of the act was extracted. By experiencing study using the purpose-oriented knowledge structured manual, it seemed as though the action was performed.

CONCLUSION

The purpose of this study was to examine in advance the educational effects of training care staff using a structured knowledge care manual. The basics of care services are commonly known. However, they may differ depending on the experience of each caregiver and the method of each institution. Many acts of care are often implicit. In the future, it is necessary to incorporate implicit knowledge into structured manuals. By creating a structured knowledge care operation manual suitable for each site, it is possible to provide reliable service to

targeted individuals. Moreover, goal-oriented structuring suitable for beginners promotes mastery. In the future, by incorporating structured knowledge care manuals into artificial intelligence (AI) and integrating them with data, we would like to improve the provision of effective care by experts to ensure the QOL of the elderly.

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PREVALENCE AND DISTRIBUTION OF MUSCULOSKELETAL DISORDERS AMONG SECONDARY SCHOOL CHILDREN IN SABAH

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ABSTRACT

The incidence of musculoskeletal disorders among school children was recorded to be 10% to 20%, and statistic show that between 20% and 25% of patients admitted to rheumatology hospitals are school children with such kinds of pain. This research was conducted to examine the occurrence and associated complications of musculoskeletal disorders among secondary school-children in Sabah. This cross-sectional explanatory survey was conducted on 449 students from secondary schools in Sabah by random sampling. The Nordic questionnaire which had been translated into Malay language as main tool in obtaining data on MSD symptoms of different body sites was completed after introducing and explaining the study goals and obtaining informed consent. From all of students that participating in this study, 69.7% had pain in their musculoskeletal system. When compared with males, female students were more likely to report musculoskeletal disorder. Musculoskeletal disorder is commonly reported among school children in Sabah. This study suggests that musculoskeletal disorders affects school children in Sabah at reasonably high rates, although the prevalence, distributions, and correlations for these conditions do not appear.

Keyword: *Musculoskeletal Disorder, Pain, Secondary School Children, Malaysia*

INTRODUCTION

Musculoskeletal disorders (MSD) is a condition which has gained higher attention in both developed and developing countries particularly due to its prevalence and the related burden to the society (Eckhoff, C and Kvernmo, S, 2014). Musculoskeletal pains are prevalent in adolescents with an increasing trend in recent decades (Stahl. M, El-Metwally A. and Rimpelä

A, 2014). Pain problems in youth tend to persist into adulthood. Musculoskeletal disorders and discomforts are among the most important causes of pain in students and adolescents. It should be considered as 3 distinct entities that are the neck, upper back and lower back pain and thoracic pain are being more prominent in younger children (Panicker & Sandesh, 2014).

Besides the workforce, school children are also affected by MSD (Chiang et al, 2006). The incidence of musculoskeletal disorders among school children was recorded to be 10% to 20%, and statistic show that between 20% and 25% of patients admitted to rheumatology hospitals are school children with such kinds of pain. In the literature, there are only a handful of studies that have been undertaken in examining the prevalence and the distribution of pain with MSD among school children in Malaysia (Mohd Azuan, et al., 2010).

METHODOLOGY

The present study was a cross-sectional explanatory study conducted among the 13 years old until 17 years old school students of a secondary school located in Sabah State, all the data collected by using self-administered questionnaire. The school was selected as per the convenience of the research team. Ethical approval for this study was obtained from the Ministry of Education Malaysia under Educational Planning and Research Division. This cross-sectional explanatory survey also was conducted on 449 students from secondary schools in Sabah by random sampling. The Nordic questionnaire which had been translated into Malay language as main tool in obtaining data on MSD symptoms of different body sites was completed after introducing and explaining the study goals and obtaining informed consent.

RESULT

The study was conducted to determine the prevalence and its distribution of body parts suffering MSD among secondary school student in Sabah, Malaysia. A total of 449 respondents from Sabah secondary schools were involved in this study. Of these, 242 (53.9 percent) were female respondents and 207 (46.4 percent) were male respondents. The descriptive statistical analysis of the participants (N=449) showed that the mean age was 14.4. The prevalence of MSD among Sabah high school students in the 6 months prior to data collection was 69.7% (95% CI: 65% -73.7%) with 69.8% female respondents and 69.6% male respondents reporting that they had MSD within 6 months period before data was retrieved.

With regards of MSD based on gender, Table 1 shows the prevalence rate of MSD with the distribution of body parts in the preceding 6 months.

Table 1: Prevalence rate of MSD with the distribution of body parts in the preceding 6 months.

	Male (%)	Female (%)	Gender Differences (p)
Musculoskeletal Disorder			

Neck				
No	111 (53%)	112 (46.3%)		0.12
Yes	96 (46.4%)	130 (50.3%)		
Shoulder				
No	88 (42.5%)	91 (37.6%)		0.29
Yes	119 (57.5%)	151 (62.4%)		
Elbow				
No	111 (53.6%)	122 (50.4%)		0.49
Yes	96 (46.4%)	120 (49.6%)		
Hand				
No	106 (51.2%)	113 (46.7%)		0.34
Yes	101 (48.8)	129 (53.3%)		
Upper Back				
No	118 (57%)	113 (46.7%)		0.02**
Yes	89 (43%)	129 (53.3%)		
Lower Back				
No	121 (58.5%)	127 (52.5%)		0.20
Yes	86 (41.5%)	115 (47.5%)		
Thigh				
No	111 (53.6)	110 (45.5%)		0.08**
Yes	96 (46.4)	132 (54.5%)		
Knee				
No	103 (49.8%)	108 (44.6%)		0.27
Yes	108 (50.2%)	134 (55.4%)		
Foot				
No	93 (44.9%)	107 (44.2%)		0.88
Yes	114 (55.1%)	135 (55.8%)		

Table 1 above shows the prevalence rate of musculoskeletal disorders and its distributions by body parts for 6 months before data were collected from adolescents in secondary schools at Sabah. There are only two parts of the body that have significant differences in the prevalence of MSD between male and female students which is in the part of upper back and thighs.

The prevalence of MSD among secondary school students in Sabah during the 6 months prior to data collection for upper back was 48.6% (95% CI: 43.7% -53.5%) and for the thigh area it was 50.8% (95% CI: 46.3% -55.7%). Significant differences were observed

in the prevalence rate of MSD between male and female students with a p value of upper back and 0.04 and p value for thighs. Both p values are smaller than 0.05.

DISCUSSION

The findings clearly showed that MSD is also experienced by school children. The prevalence of MSD among Sabah high school students in the 6 months prior to data collection was 69.7% (95% CI: 65% -73.7%) with 69.8% female respondents and 69.6% male respondents comparable to other studies such as Shamsoddini A.R, Hollisaz M. T and Hafezi. R (2010) study in secondary school children in Tehran, Iran showed that prevalence rate is 97.1%. The overall results seemed to indicate a greater prevalence among secondary school children in Sabah.

The present study shows that MSD affecting more at upper back body and thigh among school children in Sabah. This result in parallel with Elise P. Legault, Martin Descarreaux and Vincent Cantin (2015) study, that shows MSD symptoms affecting the upper back are frequent in the general adolescent population in Quebec.

MSD were common among adolescents, and their prevalence increased further during a year follow-up. In this research, females' students reported these pains more frequently than males. MSD often presented at multiple sites in these adolescents. The pain tended to extend from a single affected site to other body areas, especially in girls. The probability of experiencing multiple pains also increased over time, the majority of girls reported pain at 3 or all the distribution pain area.

CONCLUSION

As a conclusion, according to the results of the present study, MSD experienced by both male and female school children. However, since only few studies have investigated this issue; it is imperative to conduct more studies not only the prevalence rate and the distribution of body parts that affecting MSD but also the predictors associated with MSD among school children be it in the primary or secondary schools.

All these findings could suggest the importance of introducing comprehensive ergonomic programs for school children especially in Sabah. It is found there were several highest prevalence rate of MSD symptoms experienced by school children in the present study such as hand, shoulder, thigh, knee and foot.

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A PROTOCOL STUDY : RELATIONSHIP BETWEEN AMBULATORY BLOOD PRESSURE AND STRESS IN DAILY LIFE

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ABSTRACT

In recent years, research on the use a portable sphygmomanometer for blood pressure measurement in clinics and at homes has been conducted. Using a portable sphygmomanometer can be useful for determining when an increase in blood pressure occurs. In addition, prolonged exposure to stress makes blood pressure recovery difficult. By examining the relationship between changes in blood pressure and stress in daily life, it is possible to clarify during what times blood pressure and stress increase. Ecological Momentary Assessment (EMA) is a method to respond to emotional activity at a specific time, such as a portable ambulatory blood pressure (ABP) monitor. In this study, the relationship between daily blood pressure and stress was examined using an ABP monitor and EMA. In this study, systolic blood pressure, diastolic blood pressure, and heart rate were measured using an ABP monitor. Moreover, EMA was used to measure posture and activity levels, caffeine and tobacco consumption, number of positive and negative events, and stress (anxiety, tension, etc.). It was hypothesized that the more negative events and stress, the higher the blood pressure.

Keyword: Ambulatory blood pressure, stress, daily life, ecological momentary assessment

INTRODUCTION

Hypertension is a lifestyle-related disease that causes stroke and heart failure. In recent years, research on the use of a portable sphygmomanometer for blood pressure measurement in clinics and at homes has been conducted. A portable sphygmomanometer can be useful for determining when an increase in blood pressure occurs. In addition, blood pressure is closely related to stress, and blood pressure increases when exposed to stress. Anxiety and tension are mentioned as stress factors that cause blood pressure to rise. When such a factor is prolonged, it is thought that the state in which the sympathetic nerve activity is enhanced becomes prolonged, and it is difficult for blood pressure values to return to normal; as a result, hypertension develops (Spruill, 2010). Thus, many basic studies have been conducted on stress and blood pressure, and attempts have been made to examine the relationship between blood pressure and stress in daily life. Ambulatory blood pressure (ABP) measurement is mentioned as a method for monitoring blood pressure in daily life. Ecological Momentary Assessment (EMA) is often used to measure daily stressors and lifestyles in association with

ABP. EMA is a method to assess the research participant's thoughts, emotions, and actions immediately after they occur.

LITERATURE REVIEW

Conventional ABP monitoring has been used to find out when blood pressure rise occurs on the day. In addition, EMA can instantly evaluate the state of emotion and attitude at that time. By combining the two, ABP monitoring can help identify blood pressure fluctuations and the cause of blood pressure fluctuation can be identified with EMA. As a research example using the EMA, social support has been reported to play a role as a mediator of perceived stress and ABP (Bowen, Uchino, Birmingham, Carlisle, Smith, & Light, 2014). Other studies have used gender as a mediator of ABP and have examined whether the threat of social assessment differs (Smith, Birmingham, & Uchino, 2012). These studies are not addressed under the name "EMA", but the method is the same. Both studies treat psychosocial factors as important factors in blood pressure. In fact, the conventional risk factors for developing hypertension include lack of exercise, smoking, and an unhealthy diet, but psychosocial factors are also being considered (Trudel-Fitzgerald, Gilsanz, Mittleman, & Kubzansky, 2015). However, the effects of psychosocial factors on ABP elevation and ABP rise duration are still unclear and may be considered. Furthermore, few studies have examined the relationship between ABP and psychosocial factors in the Japanese population. Furthermore, in recent years, the relationship between blood pressure and positive psychological factors, such as well-being, has been reported in some studies (Boehm, & Kubzansky, 2012).

This study aimed to examine the following items in Japanese university students:

1) The influence of psychosocial factors on blood pressure rise and duration of high blood pressure, 2) Consider not only the negative psychosocial factors but also the positive factors.

METHODOLOGY

This study was conducted as a pilot study.

Participants

Approximately 40 university students will be recruited. This study targets those who have had no past or current heart disease or mental disorders.

Procedure

Participants are asked to wear the ABP monitor between 8 a.m. and 8 p.m. The ABP monitor is set to measure at 1-hour intervals. EMA was asked after each blood pressure measurement. However, if the answer cannot be provided within 30 minutes after the end of the measurement, it will be invalid. When all the day's measurements have been completed, participants will be asked to respond to the day's events in a free-form manner.

Measures

ABP monitor. Ambulatory Blood Pressure Monitor (TM-2433, A & D). The ABP monitor was used to measure ambulatory systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR). Data obtained throughout the day were stored in the ABP monitor. The data obtained were sent to a personal computer through Dr. Pro Touch (TM-2485, A & D).

EMA. Participants will be asked to answer an EMA questionnaire. The response method uses a free application called PACO. With this method, by registering a Google account in PACO in

advance, the response format is presented to the smartphone at a designated time. Set the format to be sent at the time of blood pressure measurement and instruct participants to respond after the measurement is completed. They are asked to respond about the following items in the questionnaire: anxiety, depression, nervousness, anger, stress, fatigue, joy, and happiness, as psychosocial factors. Responses ranged from 1 = "not at all" to 4 = "very much". Participants were asked about smoking, caffeine intake, and conversation before and after measurement (yes or no). In addition, had to respond whether their posture was sitting position, standing position, or recumbent position. They were also asked where they were and what they were doing (free description). When all measurements were finished, participants were asked to look back on the day's events and respond accordingly (free description).

Statistical analysis

Statistical analyses were carried out with SPSS, version 25.0, for Windows. The first analysis correlates each psychological factor with ABP. Furthermore, using mediational analysis in addition to the effects of stress on blood pressure, we examined what emotion mediation had a positive or negative association with elevated blood pressure. After that, we performed an ANCOVA with the high blood pressure group and low blood pressure group as independent variables; ABP as the dependent variable; and tobacco and caffeine, and speech and posture as covariates, with the high and low groups of variables having a strong effect as intermediaries.

RESULT

The hypotheses are described below because this study is a protocol.

Blood pressure fluctuation is expected to increase from morning to noon, and to decrease after peaking at 14:00. However, high stress and negative emotion scores are thought to increase blood pressure. Conversely, the higher the level of pleasure and well-being, the more likely daily blood pressure and fluctuation will be normal.

DISCUSSION

In this study, we examine the relationship between blood pressure and psychosocial factors in the daily life of Japanese university students. If we can find out not only the negative factors but also the influence of positive factors on blood pressure in this research, it may be useful in psychological intervention research in the future.

CONCLUSION

Clarifying the relationship between blood pressure and negative and positive psychosocial factors will be useful for future intervention research. Furthermore, being able to understand at what time of day blood pressure rises and negative events occur can help when performing interventions. For example, an individual may be able to reduce ABP by sending messages related to stress management at specific times using a smartphone application.

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EXPERIENCES AND SUPPORT NEEDS OF PARENTS WITH FOOD-ALLERGIC CHILDREN: A CASE STUDY PROTOCOL

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ABSTRACT

Food allergy is one of the most prevalent chronic diseases among young children in Japan. The number of food-allergic children is increasing. Having food-allergic children requires parents to avoid giving allergy-triggering foods, and be prepared to treat allergic reactions. This increases the burden of parenting. Parents of food-allergic children experience more psychological stress compared to those with children without food allergies (Suzuki, 2013). In Japan, the support needs and experiences of parents with food-allergic children are rarely reported. The purpose of this study is to explore their support needs and their experiences. A questionnaire and semi-structured interview will be given to a sample of 10 parents who have food-allergic children, during conferences hosted by the hospital. The questionnaire will include the following three sections: (a) demographics, (b) psychological stress with regards to parenting food-allergic children, the items taking reference from The Food Allergy Quality of Life—Parental Burden (FAQL-PB) Scale, (c) parent's experience and support needs. From these responses, this research investigates (1) to clarify the relation between social support and parental stress, and (2) to explore the factor of decreasing their parental stress.

Keywords food allergies, support needs, parenting stress, parenting experience

INTRODUCTION

Background

Many families with allergic children face support deficits and psychological isolation (Stwert, 2011). Amongst the number of people suffering from food allergies in Japan, infants and young children rank the highest and their numbers are still on the rise. About 800,000 infants have self-reported food allergies (Matsubara, 2018). Since food allergies can be life-threatening, intense care by the parents plays an important role. Special care needs to be taken in day-to-day life. For instance, preparation of alternative food, seeking help in understanding food allergy from others, and searching for the appropriate treatment (Moen et al., 2019). As evident, the parents of children with food allergies feel extremely stressed while dealing with their child's safety. Reports show such parents to have lower quality of life (QOL) and higher psychological stress than the parents of children without food allergies. Previous studies have also shown that the parents of children with chronic illnesses have their

QOL most affected by social support (Ogino et al., 2010). However, there is no study focusing on the social support for the parents of children afflicted by food allergies, in Japan.

Objectives

This paper aims (1) to clarify the relation between social support and parenting stress, and (2) to explore the factors for decreasing the stress.

LITERATURE REVIEW

Currently, there are no studies reporting the correlation between parenting stress and social support for the parents of food-allergic children. Williams, NA, & Hankey, M. (2015) however, found that social support becomes a moderator for QOL of such parents. Furthermore, it reduces their stress (Boogerd, E et al., 2014).

Stwert et al. (2011) emphasizes the importance of peer support to parents of children with allergies and promoted social support using online social networking. The satisfaction with the peer support was high, contributing to the alleviation of the psychological stress of parents with food-allergic children. In recent years, the importance of social support for the parents of children with food allergies in Japan is being recognized (Ogino & Nakamura, 2010); however, nothing much is being put into practice.

METHODOLOGY

We use a mixed method.

1) Participants

We aim to include 20 participants, from either of the parents of food-allergic children. They are selected based on the following criteria: (a) a parent with a child who was diagnosed with a food allergy by a physician, (b) the age of the child ranging between zero to 18 years. The ones excluded are: (a) those with difficulties in reading and writing Japanese, (b) those with difficulties in cooperating owing to burdens on the mind or body.

2) Procedure

We recruit participants through flyers with a URL code, at allergy clinic "Y." Those who are interested, contact us, following which they are requested to provide their (a) name, (b) contact information, (c) convenient interview schedule. The questionnaires are filled and their interviews are conducted on a set date.

3) Measures

(a) Demographic variables

The demographic variables considered, included age, gender, child's age, working conditions, marital status, allergens, severity, treatment, current treatment status, participation in community such as patient meetings, usage status of SNS, etc.

(b) Psychological stress

The Food Allergy Quality of Life—Parental Burden (FAQL-PB) Scale is a 17-item instrument. It uses a 4-point Likert scale ranging from 1 (not troubled) to 4 (extremely troubled). Questions include issues concerning going on vacation, social activities and worries and anxieties over the previous week.

The number circled for each question is summed to provide a total continuous score with a higher score indicating greater burden on the family.

(c) Social support

A parenting social support measure was created with reference to Aramaki (2005), to measure the support a mother has. We recognize five kinds of providers namely, "husband," "relatives," "friend," "nursery school teacher," "doctor," as interpersonal support. We evaluate how much instrumental and emotional support is received from each.

(d) Parental experience and support needs of food-allergic children

Stwert (2013) used a health qualitative approach. A qualitative description is hence used, to explicate the parents' stress and the support needs of children with food allergies. The semi-structured interview guides comprise ten questions, focused on demographic characteristics (5question), parenting experience regarding stress and coping, support needs with probes on timing, frequency, mode, content and support provider; and individual advice offers to mothers with the same experiences. Interview with the parents lasted for an hour. The interview data are taped and transcribed, verbatim.

4) Statistical Analysis

Mann-Whitney U test is conducted to compare the total score of the described statistics, demographic variables of participants, parenting stress, and social support. Spearman's rank correlation coefficient was used, to analyze the relationship between psychological stress and social support. A quantitative data management software, IBM SPSS Statistics 25 Core System is used for analysis.

A qualitative data management software package, NVIVO12 is employed to manage the data. Two graduate students majoring in Psychology, reviews the audiotapes and transcripts. The data codes identify across interviews and refined to be mutually exclusive, clear and specific. Disagreements regarding coding are discussed until reaching a consensus. Memos and audit trails are maintained to have detailed notes on coding and rationale, for the decisions.

RESULT

This paper describes the protocol for exploring the relation between parenting stress and social support, and explores factors relating to the support for parents of food-allergic children. However, even though the number of participants is small and more are needed, we will find the relation between parenting stress and social support.

DISCUSSION

This paper is expected to explore the important factors for reducing the stress of the parents with food-allergic children.

This will contribute towards developing the required intervention for the parents who have children afflicted by food allergies. Through a deeper understanding of the parenting experience, support charities can tailor their social support to meet the needs of caregivers and children especially through increased focus on providing them with the tools and strategies that can help reduce their parenting stress.

CONCLUSION

The rate of food allergies is on the rise. In Japan, response manual for food allergy is prepared in several facilities such as local governments and restaurants. However, the psychological stress of parents with food-allergic children is still high. The role of social support examines in this paper, we believe that it is socially significant, as they can help reduce the psychological stress. We believe that research targeting the parents of food-allergic children will become increasingly important in the future. Thus, it is also important to find out the support needs of parents and extend the same, accordingly. It has therefore been shown that social support can effectively reduce the psychological stress of the parents of children with food allergies.

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PSYCHOMETRIC PROPERTIES OF THE MALAY VERSION OF DEPRESSION, ANXIETY AND STRESS SCALE-21 ITEM (DASS21), SATISFACTION WITH LIFE SCALE (SWLS) AND THE POSITIVE AND NEGATIVE AFFECT SCHEDULE (PANAS) AMONG HEALTH CARE WORKERS IN A PUBLIC HOSPITAL IN SABAH

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ABSTRACT

The aim of this study was to validate the Malay version of Depression, Anxiety and Stress Scale-21-item (DASS21), Satisfaction with Life Scale (SWLS) and the Positive and Negative Affect Schedule (PANAS) among health care workers in a public hospital. The objective of this study was to determine the internal consistency reliability, construct validity and convergent validity of the Malay version of DASS21, SWLS, and PANAS. A total of 131 health personnel (67 male and 64 female) aged between 20-58 years from various categories in a public hospital in Kota Kinabalu, Sabah participated in the study. The Exploratory Factor Analysis found that the Malay version of DASS21, SWLS, and PANAS had moderate to high validity with factor loading values for all items ranging between 0.588 and 0.901 which in turn confirmed the construct validity. Convergent validity was also confirmed through high correlations between subscales for the Malay version of DASS21 ($r = 0.537 - 0.759$) and items for the Malay versions of SWLS ($r = 0.423 - 0.777$). For the Malay version of PANAS, its convergent validity was slightly weak as the correlations between items for each dimension ranged from low to moderate correlation ($r = 0.189 - 0.585$). The reliability analyses found that the Malay version of DASS21 had good Cronbach alpha values of 0.85, 0.80 and 0.78 for Stress, Depression and Anxiety subscales respectively while the Cronbach alpha values for the Malay version of SWLS and PANAS-Positive Affect, and PANAS-Negative Affect were 0.87, 0.88, and 0.89 respectively. The results of this study showed that these Malay versions of DASS21,

SWLS, and PANAS had good reliability and validity which can be applied in the local context primarily among public health personnel.

Keywords: Psychometric properties, exploratory factor analysis, construct validity, convergent validity, discriminant validity, internal consistency reliability, depression, anxiety, stress, satisfaction with life, positive affect, negative affect, and health care workers.

INTRODUCTION

The healthcare environment is demanding and healthcare workers in the Southeast Asian region experience expanding job scopes and responsibilities coupled with the shortage and maldistribution of resources (Kanachitra et al., 2011). Researchers view hospital healthcare workers as those serving patients with more chronic and severe illnesses (Kuhn and Flanagan 2017). They suffer from adverse working conditions such as excessive workload, interruptions in workflow, time pressure, zero tolerance for mistakes and low social support and this may have led to a high prevalence of burnout and psychological distress among healthcare workers (Vijendren et al 2015). Having a good psychological health is crucial in achieving overall health and well-being (Wang, & Karpinski, 2016). The work environment is one of many settings that have an impact on psychological health. It has been stated that workplace environment influence the mental health problems including depression, anxiety, and stress, life satisfaction and emotional health. Limitations of available scales to measure depression, anxiety, stress, life satisfaction, and positive, and negative affect among local health personnel has led to the use of the Depression, Anxiety, and Stress Scale-21 Items (DASS21), Satisfaction with Life Scale (SWLS), and Positive and Negative Affect Scale (PANAS). Thus, the aim of this study was therefore to examine the psychometric properties of the Malay version of Depression, Anxiety, and Stress Scale (DASS21), Satisfaction with Life Scale (SWLS), and Positive and Negative Affect Scale (PANAS) on health care workers in a public hospital, in Sabah.

Research Background

Psychometric is the construction and validation of measurement instruments and assessing if these instruments are reliable and valid forms of measurements. The measurement usually takes place in the form of a questionnaire which must be evaluated extensively before they are declared as having excellent psychometric properties meaning that the scales are both reliable and valid. A reliable scale consistently measures the same construct. This can occur across testing sessions, individuals and setting. Validity measures what it is going to measure. It therefore confirms the ability of the instrument to measure what it is supposed to measure.

The Depression, Anxiety, and Stress Scale (DASS) was originally developed for people aged 17 years or older but maybe appropriate for younger age (McDowell, 2006). The purpose is to evaluate the severity of core symptoms of depression, anxiety and stress (or tension) over the previous week (Lovibond & Lovibond, 1995; McDowell, 2006). The Depression subscale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, a lack of interest/involvement, anhedonia, and inertia. The Anxiety subscale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. While, Stress subscale assesses difficulty relaxing, nervous arousal, and being easily

upset/agitated, irritable/over-reactive and impatient. Together the scale provide a broad range of psychological distress (McDowell, 2006). Its main application is to identify emotional disturbance as part of a broader clinical assessment in general and clinical research set up. It is also suitable for tracking change in severity over time and the three dimensions of psychological distress are inter-correlated because they share common causes (McDowell, 2006).

The English version of DASS has been translated into various languages such as Malay, Arabic, Chinese, Dutch, German, Spanish, Japanese, Persian and Vietnamese. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. Scores for Depression, Anxiety and Stress are then calculated by summing the scores for the relevant items. The total and subscale scores of the DASS-21 instrument must be multiplied by 2 to simulate the full-scale version scores.

One of the most robust and well-researched concepts of happiness in psychology is subjective well-being which was developed by Diener and colleagues (Diener et al., 1985). Subjective well-being is a construct that reflects the evaluation of a person's quality of life. It is a multifaceted concept that is comprised of two dimensions: an affective or emotional dimension and a cognitive or evaluative dimension (Diener et al 1985). The affective dimensions refers to the positive and negative emotions that a person is experiencing while the cognitive component refers to the global evaluation of the degree of satisfaction with one's life. The Satisfaction with Life Scale (SWLS) assesses the cognitive component of the subjective well-being. The scale does not focus on specific domains of an individual's life but assesses a global level of life satisfaction according to the subjective criteria that the person has established for himself or herself. The SWLS has also been translated into various languages such as Spanish, Brazil, Malay, Swedish and Taiwan versions.

The SWLS includes five items which assesses the overall level of the individual's satisfaction with life (Diener et al, 1985). Respondents answer a 7-point Likert scale ranging from '1 (strongly disagree)' to '7 (strongly agree).' Items are added up in order to yield a total score of life satisfaction. The possible range of score is between 5 and 35 with greater scores signifying more satisfaction with life. Diener and colleagues (Diener et al., 1985), have shown that the scale has good psychometric properties, a high test-retest coefficient and a good level of internal consistency. Studies with a wide range of samples also confirmed the good psychometric properties of the SWLS (Pavot & Diener (2008). Studies showed high internal consistency with Cronbach alpha indexes ranging from 0.79 to 0.91 (Clench et al., 2011; Hultell & Gustavsson, 2008; Pavot & Diener, 1993, 2008).

Watson and Clark (Watson and Clark, 1988) developed a two 10-item mood scales that comprise the Positive and Negative Affect Schedule (PANAS). Positive Affect (PA) and Negative Affect (NA) might suggest that these two mood factors are opposites (strongly negatively correlated). They however have in fact emerged as highly distinctive dimensions that can be meaningfully represented as orthogonal dimensions in factor analytic studies of affect. PA reflects the extent to which a person feels enthusiastic, active and alert. High PA is a state of high energy, full concentration and pleasureable engagement. Low PA is characterized by sadness and lethargy. NA on the other hand is a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear and nervousness and low NA being a state of calmness and

serenity. A study has linked trait NA and PA respectively to psychobiological and psychodynamic constructs of sensitivity to signals of reward and punishment (Tellegen, 1985). This study also suggested that low PA and high NA (both state and trait) are major distinguishing features of depression and anxiety respectively (Tellegen, 1985). While studies conducted by Clark and Watson (Clark and Watson, 1986, 1988) found these NA and PA scales to have low or non-significant correlations with one another, Diener and colleagues (Diener et al 1984) found them to be substantially related.

The questionnaires mentioned above are easy and simple to administer to the general population as well as health care workers without any special training. In this study all health care workers are adults with good literacy, free from medical symptoms, without any cognitive impairments and free from medication effects. All questionnaires are relatively culture free as none of the items in the questionnaire mention any aspects on certain culture or religion. While there is no psychometric assessments on DASS21, SWLS and PANAS for public health care workers, this study sought to examine the psychometric properties of the Malay versions of Depression, Anxiety, and Stress Scale (DASS21), Satisfaction with Life Scale (SWLS), and Positive and Negative Affect Scale (PANAS) on health care workers in a public hospital, in Sabah. The psychometric properties of all these instruments was evaluated in terms of reliability, construct validity, and convergent validity.

METHOD

Participants

Respondents selected for this study enrolled in a public hospital in Kota Kinabalu, Sabah. In total, 131 health care workers (67 males and 64 females) aged between 20 and 58 ($M_{age} = 30.01$, $SD = 9.56$) years was selected by a purposeful sampling. More than half of the respondents were married health care workers (53.4%) as compared to single health care workers (45.8%) and widow/widower (0.8%). All respondents were selected from the Orthopedic, Physiotherapy and Occupational therapy department. Majority of the sample were paramedics (74.0%) as compared to Medical Officers (23.7%) while the remaining were the specialists (2.3%). More than one third of the respondents (36.3%) belonged to the U29 grade followed by U32 (15.3%) and UD41 (13.7%), while the rest (U11, U14, U36, U38, U40, U41, U42, U44, U48, UD44, UD48, UD52, UD54) formed less than 10% of respondents.

Procedure

Written permission was obtained from the Ministry of Health (MOH) Malaysia to conduct this study among health care workers in the identified hospital. After obtaining permission, all respective Head of Units of the hospital were notified. All Head of Units involved were briefed on the purpose of the study and arrangements were made to conduct the study during the in-house teaching Continuing Medical Sessions (CME). Data collection was conducted via a face-to-face guided self-administered questionnaire. All disciplines involved in this study were reminded on the purpose of the study. They were informed that their participation in the study was voluntary and that all information obtained was deemed confidential. Respondents were asked to fill the consent form and upon their agreement to participate in the study. All

respondents filled the forms independently without any discussion among their colleagues. They completed the questionnaire in averages of 40 minutes which was held on Thursday and Friday morning or evening. The Malay versions of SWLS and PANAS are adapted from existing Malay versions. In this study, we have translated the Malay version of DASS21 according to Brislin's (1970) back-to-back translation method. All scales were then tested on respondents as a pilot study. This was an essential step in order to test the feasibility and adequacy of the instrument, the problem of data collection strategy and the proposed study method.

Measurements

Depression, Anxiety, and Stress Scale-21 Items

The Depression, Anxiety and Stress Scale-21 Items (DASS-21) (Lovibond and Lovibond, 1995) is a self-reporting tool designed to measure self-perceived depression, anxiety and stress over the past week in various clinical and non-clinical populations. It is a shortened version of the 42-item of Depression, Anxiety and Stress scale (DASS-42) (Lovibond, & Lovibond, 1995). The DASS is a state measure and not a trait measure. It is a quantitative measure along the three axes of depression, anxiety and stress. DASS scale scores are dimensional rather than a categorical conception of psychological disorder (Lovibond and Lovibond 1996). It is designed to measure the severity of a range of symptoms common to both depression and anxiety (Gomez, 2010). He further stated that the essential function of the DASS is to not only assess the severity of the core symptoms of depression, anxiety and stress but it is also a means by which a patient's response to treatment can be measured. The emotional syndromes like depression and anxiety are intrinsically dimensional and vary along a continuum of severity. The DASS severity labels are used to characterise the full range of scores in the population, so "mild" means that the person is above the population mean but still well below the typical severity of people seeking help. It does not mean a mild level of a 'disorder.' Although the stress scale can be distinguished from depression and anxiety in factor analysis, all three DASS scales of Depression, Anxiety and Stress are moderately intercorrelated (typical $r_s = 0.5 - 0.7$).

The English version of DASS-21 has been translated into various languages such as Arabic, Chinese, Dutch, German, Spanish, Japanese, Persian, Vietnamese and Malay (Yusoff, 2013). A study found that the Malay version of the DASS-21 is relatively more reliable than the English version. It could be due to the cross-cultural variability of the internal consistency of the DASS (Norton, 2007). The Malay version of DASS-21 was therefore used in this study population of health workers. The major development of the DASS scales was carried out with normal, non-clinical samples (Lovibond and Lovibond, 1995). Thus the central aim of the development of the DASS scales was to generate measures of general negative affective syndromes guided by existing conceptions but ultimately determined on empirical grounds (Lovibond and Lovibond 1995). The DASS is suitable to be used in any clinical or non-clinical settings (Crawford and Henry 2003).

Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS) is a 20-items self-report measure of positive and negative affect developed by Watson and colleagues (Watson, Clark and Tellegen,

1988b). It has been shown to be a reliable and valid measure of the constructs it was intended to assess (Crawford & Henry, 2004). Both Positive Affect and Negative Affect reflect dispositional dimensions with high Negative Affect epitomized by subjective distress and unpleasurable engagement and low Negative Affect by the absence of these feelings. Positive Affect on the other hand represents the extent to which an individual experiences pleasurable engagement with the environment. Enthusiasm and alertness indicate emotional states with high positive affect while lethargy and sadness characterize low positive affect (Watson & Clark 1984). Since its development, the PANAS measures have been employed in research for diverse purposes. In this study, the original Malay version of PANAS was adapted (Ferlis, Rosnah, Vincent, Chua, & Murnizam, 2012).

Satisfaction with Life Scale

The Satisfaction with Life Scale (SWLS) on the other hand is a 5-item scale designed to measure global cognitive judgements of one's life satisfaction. It therefore assesses satisfaction with the respondent's life as a whole. It is not a measure of either positive or negative affect (Diener et al, 1985). It was developed as a measure of the judgemental component of subjective well-being (SWB). The SWLS is shown to be a valid and reliable measure of life satisfaction suited for use with a wide range of age groups and applications. It consists of a 5 item questionnaire each of which has a 7-point Likert scale in which participants would indicate how much they agree or disagree with ranging from '7 (strongly agree)' to '1 (strongly disagree).' Items are added up in order to yield a total score of life satisfaction. The scale does not assess satisfaction with life domains such as health or finances but allows subjects to integrate and weigh these domains in whatever way they choose. The SWLS is recommended as a complement to scales that focus on psychopathology or emotional well-being because it assesses an individual's conscious evaluative judgement of his or her life by using the person's own criteria. Again, the original Malay version of SWLS was adapted (Ferlis, 2014).

Statistical Analyses

Data were processed using the Statistical Package for Social Sciences (IBM SPSS) 25.0 for Windows. First of all, data screening, estimating item analysis, variances, means and standard deviation of the instruments were conducted. Then the item-test and inter-item correlations, internal consistency reliability was examined. Thereafter an Exploratory Factor Analysis (EFA) was performed to finalize the factorial structure of the scales. The construct validity of the scale was performed and thereafter the convergent validity of the scales was finalized. The internal consistency reliability was measured using the Cronbach alpha. Reliability is necessary for an instrument but high reliability does not guarantee that the instrument is a good measure. The Cronbach alpha value ranges between 0 and 1. The closer the Cronbach alpha value reaches to 1, the higher is the reliability of the instruments used in this study. Hence they demonstrate good internal consistencies. Validity on the other hand concerns what an instrument measures and how well it does that task. Validation information informs a user when it is appropriate to use an instrument and what can be inferred from the results. Construct validity is measured using the EFA. EFA is a statistical technique that is used to

analyse the correlations of a set or sets of data. It examines the internal structure of the instrument while the convergent validity is determined by correlation analysis.

Results

Construct Validity

Construct validity of the Malay version of DASS21, SWLS, and PANAS were analysed using exploratory factor analysis (EFA). For the Malay version of DASS21, only 4 out of the 7 items of the Depression subscale showed high loading factors ranging from 0.717 to 0.855. The analysis for Anxiety subscale showed 5 out of the total 7 items having high loading factors ranging from 0.670 to 0.788 while analysis for Stress subscale showed all 7 items having moderate loading factors ranging from 0.588 to 0.781. The now-16 items of Malay version of DASS21 was able to actually measure depression, anxiety, and stress among health care workers. Table 1 shows the exploratory factor analysis for the Malay version of DASS21.

Table 1
Exploratory factor analysis for Malay version of Depression, Anxiety and Stress Scale-21 Items (DASS21)

Items	Loading Factor		
	Depressio n	Anxiety	Stress
<i>Saya sukar untuk mendapatkan semangat bagi melakukan sesuatu perkara.</i>	.855		
<i>Saya tidak bersemangat dengan apa jua yang saya lakukan.</i>	.826		
<i>Saya tidak dapat mengalami perasaan positif sama sekali.</i>	.769		
<i>Saya rasa saya tidak mempunyai apa-apa untuk diharapkan.</i>	.717		
<i>Saya bimbang keadaan di mana saya mungkin menjadi panik dan melakukan perkara yang membodohkan diri sendiri.</i>		.788	
<i>Saya berasa takut tanpa sebab yang munasabah.</i>		.756	
<i>Saya rasa hampir-hampir menjadi panik/cemas.</i>		.751	
<i>Saya sedar tindakbalas jantung saya walaupun tidak melakukan aktiviti fizikal (contohnya kadar denyutan jantung bertambah, atau denyutan jantung berkurangan).</i>		.709	
<i>Saya rasa menggeletar (contohnya pada tangan).</i>		.670	
<i>Saya rasa sukar untuk relaks.</i>			.781
<i>Saya tidak dapat menahan sabar dengan perkara yang menghalang saya meneruskan apa yang saya lakukan.</i>			.779

<i>Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas.</i>	.779
<i>Saya cenderung untuk bertindak keterlaluan dalam sesuatu keadaan.</i>	.765
<i>Saya dapati diri saya semakin gelisah.</i>	.749
<i>Saya dapati diri saya sukar ditenteramkan.</i>	.671
<i>Saya rasa yang saya mudah tersentuh.</i>	.588

Table 1
Exploratory factor analysis for Malay version of Depression, Anxiety and Stress Scale-21 Items (DASS21) (Translated to English)

Items	Loading Factor		
	Depressio n	Anxiety	Stress
<i>I find it difficult to work up the initiative to do things</i>	.855		
<i>I was unable to become enthusiastic about anything</i>	.826		
<i>I couldn't seem to experience any positive feeling at all</i>	.769		
<i>I felt that I had nothing to look forward to</i>	.717		
<i>I was worried about situations in which I might panic and make a fool of myself</i>		.788	
<i>I felt scared without any good reason</i>		.756	
<i>I felt I was close to panic.</i>		.751	
<i>I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)</i>		.709	
<i>I experience trembling(eg. In the hands)</i>		.670	
<i>I found in difficult to relax</i>			.781
<i>I was intolerant of anything that kept me from getting on with what I was doing.</i>			.779
<i>I felt that I was using a lot of energy when im nervous</i>			.779
<i>I tended to over-react to situations</i>			.765
<i>I found myself getting agitated.</i>			.749
<i>I found it hard to wind down</i>			.671
<i>I felt that I was rather touchy</i>			.588

Factor analysis on 5 items of the Malay version of SWLS showed good loading factors ranging from 0.668 to 0.901 and it correlates with the total score of SWLS. The Malay version of SWLS was expected to measure life satisfaction among health care workers.

Table 2 shows the exploratory factor analysis for the Malay version of SWLS.

Table 2

Exploratory factor analysis for Malay version of Satisfaction with Life Scale (SWLS)

Items	Loading Factor
<i>Saya berpuas hati dengan kehidupan saya.</i>	.901
<i>Keadaan kehidupan saya adalah cemerlang.</i>	.894
<i>Dalam banyak perkara, kehidupan saya adalah hampir dengan ciri kehidupan ideal (sempurna) saya.</i>	.840
<i>Setakat ini, saya telah memperolehi perkara penting yang saya inginkan dalam kehidupan.</i>	.821
<i>Jika saya dapat mengulangi kehidupan saya, saya tidak akan mengubah apa-apa pun.</i>	.668

Table 2

Exploratory factor analysis for Malay version of Satisfaction with Life Scale (SWLS)(English translation)

Items	Loading Factor
<i>I am satisfied with my life</i>	.901
<i>The conditions of my life are excellent</i>	.894
<i>In most ways my life is close to my ideal</i>	.840
<i>So far I have gotten the important things I want in life</i>	.821
<i>If I could live my life over, I would change almost nothing</i>	.668

For the Malay version of PANAS, factor analysis showed 7 out of 10 items of Positive Affect subscale having good loading factors ranging from 0.673 to 0.827, while 5 out of 10 items of Negative Affect subscale have good loading factors ranging from .780 to .881. The Malay version of PANAS with 12 items remaining would measure Positive and Negative affect among public health personnel. Table 3 shows the exploratory factor analysis for Malay version of PANAS.

Table 3
*Exploratory factor analysis for Malay version of
 Positive and Negative Affect Schedule (PANAS)*

Items	Loading Factor	
	Positive Affect	Negative Affect
<i>Berminat</i>	.827	
<i>Aktif</i>	.798	
<i>Bertekad</i>	.785	
<i>Terinspirasi</i>	.776	
<i>Bersemangat</i>	.761	
<i>Teruja</i>	.747	
<i>Kuat</i>	.673	
<i>Gementar</i>		.881
<i>Takut</i>		.879
<i>Gelisah</i>		.859
<i>Bersalah</i>		.780
<i>Khuatir</i>		.778
<i>Pemarah</i>		
<i>Waspada</i>		

Table 3
*Exploratory factor analysis for Malay version of
 Positive and Negative Affect Schedule (PANAS) (
 English Translation)*

Items	Loading Factor	
	Positive Affect	Negative Affect
<i>Interested</i>	.827	
<i>Active</i>	.798	
<i>Determined</i>	.785	
<i>Inspired</i>	.776	
<i>Enthusiastic</i>	.761	
<i>Excited</i>	.747	
<i>Strong</i>	.673	
<i>Jittery</i>		.881
<i>Afraid</i>		.879
<i>Scared</i>		.859
<i>Guilty</i>		.780
<i>Nervous</i>		.778
<i>Irritable</i>		
<i>Alert</i>		

Convergent Validity

The validity of all scales was examined using convergent validity which was measured by positively significant correlation between its aspects that have the same trait or measure the same construct. The Pearson's correlation analysis between the Malay version of DASS21 subscales indicated good convergent validity as the correlations were positively significant ranging from $r = 0.537$ to 0.759 (Table 4).

The SWLS is a unidimensional construct and its convergent validity is measured by positively significant correlation between items. The analysis showed that all 5 items of the Malay version of SWLS was positively significantly correlated ranging from $r = 0.423$ to 0.777 (Table 5). The correlation analysis between the subscales of the Malay version of PANAS was not significant (Table 6). However, the results do not mean that convergent validity is not obtained due to the difference of dimensions that measure the same concept of affective with the opposite traits which is Positive and Negative Affect. However, correlation analysis between item for each dimension showed that Positive Affect items was positively significantly correlated ranging from $r = 0.189$ to 0.585 (Table 7) while Negative Affect items were positively significantly correlated ranging from $r = 0.213$ to 0.554 (Table 8).

Table 4

Pearson's correlation coefficients between the Malay version of Depression, Anxiety and Stress Scale-21 Item (DASS21)

Items	1	2	3
1. Depression	-		
2. Anxiety	.577**	-	
3. Stress	.537**	.759**	-

Note: ** $p < .01$

Table 5

Pearson's correlation coefficients between the Malay version of Satisfaction with Life Scale (SWLS) items

Items	1	2	3	4	5
1. Item 1	-				
2. Item 2	.699**	-			
3. Item 3	.711**	.777**	-		
4. Item 4	.599**	.663**	.692**	-	
5. Item 5	.435**	.518**	.501**	.423**	-

Note: ** $p < .01$

Table 6

Pearson's correlation coefficients between the Malay version of Positive and Negative Affect Schedule (PANAS)

Items	Negative Affect
Positive Affect	-.072

Table 7

Pearson's correlation coefficients between the Malay version of Positive and Negative Affect Schedule (PANAS) – Positive Affect items

Items	1	2	3	4	5	6	7
1. Item 1	-						
2. Item 2	.287**	-					
3. Item 3	.211*	.317**	-				
4. Item 4	.361**	.434**	.443**	-			
5. Item 5	.487**	.469**	.323**	.585**	-		
6. Item 6	.417**	.443**	.447**	.545**	.533**	-	
7. Item 7	.252**	.254**	.189*	.404**	.414**	.298**	-

Note: * $p < .05$ ** $p < .01$

Table 8

Pearson's correlation coefficients between the Malay version of Positive and Negative Affect Schedule (PANAS) – Negative Affect items

Items	1	2	3	4	5
1. Item 1	-				
2. Item 2	.291**	-			
3. Item 3	.213**	.554**	-		
4. Item 4	.499**	.438**	.367**	-	
5. Item 5	.269**	.479**	.411**	.340**	-

Note: ** $p < .01$

Internal Consistency Reliability

Reliability of scales is measured using internal consistency of Cronbach alpha. The internal consistency reliability coefficients of the Malay version of DASS21 was 0.80, 0.78, and 0.85 for Depression, Anxiety and Stress subscales respectively. The internal consistency reliability coefficients of the Malay version of SWLS was 0.87 while the internal consistency reliability coefficients of the Malay version of PANAS was 0.88 and 0.89 for Positive Affect and Negative Affect respectively. Table 8 shows the internal consistency reliability of the Malay version of DASS21, SWLS and PANAS using Cronbach alpha.

Table 8
Cronbach alpha coefficients of the Malay version of Depression, Anxiety, and Stress Scale-21 Items (DASS21), Satisfaction with Life Scale (SWLS) and Positive and Negative Affect Schedule (PANAS)

Scale	Cronbach Alpha
DASS21	
Depression	.80
Anxiety	.78
Stress	.85
SWLS	.87
PANAS	
Positive Affect	.88
Negative Affect	.89

DISCUSSION

The purpose of this study was to examine the psychometric properties of the Malay version of Depression, Anxiety, and Stress Scale (DASS21), Satisfaction with Life Scale (SWLS), and Positive and Negative Affect Schedule (PANAS) on health care workers in a public hospital. The results indicate that the Malay version of DASS21 demonstrate adequate psychometric properties in this sample of health care personnel. The demonstrated factor structure is empirically congruent with what is known about Depression, Anxiety and Stress among health care workers. The now-16 items of Malay version of DASS21 solely focuses on Depression, Anxiety and Stress. All factors indicate high internal consistencies. In addition, all Depression, Anxiety, and Stress subscales was highly correlated to each other confirming its convergent validity. These findings support the previous study (such as Musa et al., 2007, 2009) that the Malay version of DASS21 has good validity and internal consistency reliability. Local studies found high internal consistency for the Malay version of DASS21 ranging between 0.74 and 0.84 (Musa et al., 2007, 2009). Other studies found that the English version of DASS21 had a reliability coefficient ranging between 0.81 and 0.97 (McDowell, 2006). The alpha values for 7-items scales developed by Lovibond and Lovibond had values ranged between 0.71 and 0.81 (Lovibond and Lovibond, 1996).

The same analysis also found that the Malay version of SWLS demonstrated adequate psychometric properties in this sample. The factor structure formed is congruent with Satisfaction With Life for health care workers. All 5 items of Malay version of SWLS truly focused on satisfaction with life. The reliability analysis indicated a high internal consistency. All SWLS items were highly correlated to each other thereby confirming its convergent validity. These finding support the previous study (i.e., Jiepanis & Bahari, 2018; Pavot & Diener, 1993; Vasquez et al., 2013) that the Malay version of SWLS has good validity and internal consistency reliability. The fifth item of the scale had the weakest association with the latent life

satisfaction construct and it showed the weakest factor loadings than the rest of the items (Pavot & Diener, 1993; Vasquez et al., 2013). Hence in this study, the Malay version of SWLS showed adequate construct validity. Diener and colleagues have shown that the original version of SWLS has good psychometric properties, a high test-retest coefficient and a good level of consistency (Diener et al., 1985). Studies on SWLS also showed high internal consistency with Cronbach alpha indices ranging from 0.79 to 0.91 (see Clench et al., 2011; Hultell & Gustavsson, 2008; Pavot & Diener, 1993, 2008). It can be inferred that in this study the Malay version of SWLS can be used as a reliable tool for Life Satisfaction assessment among health care workers.

Finally, the Factor analysis showed that the Malay version of PANAS has a good construct formation for health care workers. The factor structure formed was able to measure the Positive and Negative Affect among health care workers. The remaining 12 items of Malay version of PANAS solely focused on the Positive and Negative affect. The reliability analysis indicate high internal consistency. The correlation between PANAS subscales was not correlated in this study as stated in other study (see Watson & Clark, 1988). The convergent validity is confirmed through high correlation between items for each subscales. Again, these findings support the previous study (such as Watson, Clark & Tellegen, 1988) that the Malay version of PANAS has good validity and internal consistency reliability. Studies have demonstrated internal consistency for PANAS ranging between 0.86 and 0.90 for Positive Affect and 0.84 and 0.87 for Negative Affect (Watson, Clark & Tellegen, 1988).

The now-16 items of the Malay version of DASS21, 5 items of the Malay version of SWLS and 12 items of the Malay version of PANAS shows promise in measuring health care workers' experiences of depression, anxiety, and stress, satisfaction with life and positive and negative affect.

CONCLUSION

Any measurement that has been translated to an expected language (i.e., Malay) from its original requires psychometric test. This test will allow the instrument to be adapted and used among the expected sample. The DASS21, SWLS and PANAS has been translated to Malay language and it was adapted in the current study. Hence its psychometric properties must be conducted among the sample to confirm its validity and reliability. We conclude that the Malay version of DASS21, SWLS and PANAS demonstrates good validity and reliability and is suited to be administered to normal health care workers. This study however has some limitations as it was confined to certain disciplines of the hospital and hence might not represent the whole medical fraternity in the hospital. Secondly, sample size is small and therefore should be interpreted with caution. While to the author's knowledge this could be the first study to explore validity, reliability and usefulness evidence of the Malay versions of DASS21, SWLS and PANAS as a tool to screen psychological health among health care workers of varied positions, further studies are necessary to revalidate these scales for health care workers from all disciplines across other hospitals in Sabah.

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PSYCHOSOCIAL FACTORS, DEPRESSION AND MUSCULOSKELETAL DISORDERS AMONG TEACHERS

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ABSTRACT

One of the occupations that suffered from musculoskeletal disorder (MSD) is teaching profession. Although there has been a health and safety issues on teachers, few studies that related with somatic health problems of teachers were actually published particularly studies conducted in Malaysia itself. From this viewpoint, it shows clearly the need and importance to investigate psychosocial factors, and MSD with depression as mediator among school teachers. The study aimed to determine the prevalence of MSD in the past 6 months among primary school teachers in Kuala Lumpur. Secondly, the study also sought to examine the relationships between psychosocial factors, depression and MSD among teachers. Thirdly, the study aimed to explore depression as mediator. This cross-sectional study of a group of primary school teachers ($n=367$) in Kuala Lumpur tested the hypothesis that depression mediate the effect of psychosocial factors on MSD. The prevalence of MSD in the past 6 months was 80.1% (95% CI: 75.8% – 84.2%), with 80.5% of female and 77.5% of male teachers reporting discomfort in the preceding six months. There were significant relationships between psychosocial factor, depression, and MSD. The results indicated that in relation to psychosocial factor, depression ($r = -0.25, p < .01$) musculoskeletal disorder ($r = -.17, p < .01$) were both negative. In addition, depression was positively related to musculoskeletal disorder ($r = .30, p < .01$). Furthermore, depression was a partial mediator in the relationship between psychosocial factors and MSD. The findings from the present study support the idea that psychosocial factors and depression are significant predictors of MSD among teachers. It is important to understand the relationship between the variables so that it will help those teachers in arranging, planning or actualizing preventive intervention programs in order to reduce the risk of MSD. This study also provides awareness for teachers and those parties Malaysian Ministry of Education regarding the issues of MSD at the workplace.

Keywords: *psychosocial factors, depression, MSD, teachers*

INTRODUCTION

Psychosocial factors play an important role in the development and exacerbation of MSD (Darwish & Al-Zuhair, 2013; Erick & Smith, 2014; Jaafar & Rahman, 2017; Maakip, Keggel, & Oakman, 2015; Maakip, Keggel, & Oakman, 2017; Zamri, Moy, & Hoe, 2017). Psychosocial factors, for example consists of burden, feeling of tension, social help, low job control, work fulfillment and repetitive work are in all probability related with MSD among teachers (Samad,

Abdullah, Moin, Tamrin, & Hashim, 2010; Zamri, Moy & Hoe, 2017). Strong evidence supported the association of psychosocial factors at work with MSD (Bernal, Campos-Serna, Tobias, Vargas-Prada, Benavides, & Serra, 2015; Bongers, de Winter, Kompier, & Hildebrandt, 1993; Bongers, Koes, & Bouter, 2000; Bongers, Ijmker, van den Heuvel, & Blatter, 2006; Chiu, Lau, Ho, Ma, Yeung, & Cheung, 2006; Chiu & Lam, 2007; Darwish & Al-Zuhair, 2013; Erick & Smith, 2014; Hoogendoorn, van Poppel, Tsuboi, Takeuchi, Watanabe, Hori, & Kobayashi, 2002; Jaafar & Rahman, 2017; Maakip, Keegel, & Oakman, 2017; Mohseni-Bandpei, Ehsani, Behtash, & Ghanipour, 2014; Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Yue, Xu, Li, & Wang, 2014; Zamri, Moy, & Hoe, 2017). This relationship happened due to the fact that teachers often work in stressful conditions with a huge classes, a need of instructive assets, and restricted remuneration for their work (Cardoso, Ribeiro, Araújo, Carvalho, & Reis, 2009; Zamri, Moy & Hoe, 2017). As a result, an increased in job demand with extra responsibility and additional workload in teaching profession make them liable to experience the risk of MSD (Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Zamri, Moy, & Hoe, 2017). Psychosocial factors in the work environment can have a meaningful link on employee health on both psychological and physical level (Eatough, Way, & Chang, 2012). Psychosocial impacts can be seen through sleep deprivation, irritability, anxiety and depression (Clairborne, Vandenburg, Krause, & Leung, 2002).

One of the highest prevalence mental health disorders is depression. According to the World Health Organization (WHO), depression is world's fourth most immobilizing disease (WHO, 2017). Closer to home, about 9% of Malaysian were reported having major depression and ranked depression as the fourth most immobilizing illness in the country (Malaysian Psychiatric Association, 2017). Depressed patients often complain about MSD and depression, and depressive symptoms are frequently found in patients with musculoskeletal pain. Furthermore, patients with MSD have been reported to experience an even higher rate of depression, with a point prevalence rate as high as 30% to 54% (Banks & Kerns, 1996). According to Poleshuck, Bair, Kurt Kroenke, Damush, Tu, Wu, Krebs, and Giles (2009) stated the co-occurrence between MSD and depression in which individual with pain are at increased risk for depression.

The issue of musculoskeletal problems in adult population is overwhelming (Durmus, 2012). Teaching profession is one of the occupations that suffered from MSD (Mohseni-Bandpei, Ehsani, Behtash, & Ghanipour, 2014). School teachers are at an increased risk of MSD, with prevalence rates reported between 12% and 84% which showed in a significant body of research recently (Korkmaz, Cavlak, & Telci, 2011). A wide variety in the incidence of MSD in school teachers has been reported: for example, from a low of 17.7% in Japan, to 53.3% in Brazil, 59.2% in China and as high as 61% in the United States (Mohseni-Bandpei, Ehsani, Behtash, & Ghanipour, 2014). Other studies have also found school teachers to be an occupational group with a particularly high incidence of MSD (Cardoso, Ribeiro, Araújo, Carvalho, & Reis, 2009) reporting rates of between 40% and 95% (Allsop, & Ackland, 2010). Teachers are not only engage in pedagogical work, but also must prepare lessons, evaluate students, and assist with sports and other extracurricular activities. Given this, due to this wide range of duties and activities, teachers may be particularly vulnerable to both physical and emotional issues (Chong & Chan, 2010).

MSD is a significant global health problem with International Labor Organization (ILO, 2009) reported that MSD have led to increased health problems among working population. MSD are caused by physical factors such as repetitive movements and work that is not suitable for a person, the requirement in stressful situations, awkward situations, extreme positions, and a static position. Various studies have been undertaken to determine the risk factors of MSD and on strategies to control them. However, despite this, MSD are still the most prevalent and the most common cause of disability among teachers worldwide. Several studies have reported high incidences of MSD among teachers (Erick & Smith, 2014; Mohseni-Bandpei, Ehsani, Behtash & Ghanipour, 2014; Yue, Liu, & Li, 2012). Frequent reading, marking of assignments as well as writing on blackboard are the nature of job performed by the school teachers. Poor posture and improper techniques of lifting or carrying are the two very common causes of low back pain. Meanwhile, lifting heavy loads that involved materials such as books, overhead projectors and other equipment has also ranked as the main contributing factor for MSD development (Tessa, 2010). The main contributing factor for MSD development is lifting heavy loads that involved materials such as books, overhead projectors and other equipment. Despite the abundant literature on work related MSD, very few studies have been conducted concerning MSD among those in the teaching profession here in Malaysia (Anuar, Rasdi, Saliluddin, & Abidin, 2016; Balakrishnan, Chellapan, & Thenmozhi, 2016; Mohseni-Bandpei, Ehsani, Behtash, & Ghanipour, 2014; Zamri, Moy, & Hoe, 2017), and also specifically on the teachers who also experience MSD at an exceeding rate (Anuar, Rasdi, Saliluddin, & Abidin, 2016; Balakrishnan, Chellapan, & Thenmozhi, 2016; Zamri, Moy, & Hoe, 2017).

MSD can be resolve in 2-4 weeks as it is an initial episode (McKeon, Albert, & Neary, 2006). Those people who living with musculoskeletal complaints may have the effects such as physical, social, and mental disturbing which will affect their work. (Tavafian, Jamshidi, Mohammad, & Montazeri, 2007). For the physical impact such as physical function lost and general health getting worsens while participation in social activities will be decreased for the social impact. In addition to physical factors, other factors associated with the risk of MSD include psychosocial factors. The factors associated with pain in the neck and shoulders. Among the aspects of this factor is high workload, lack of support from supervisors and co-workers, time pressure, low job control, and feel depressed (Samad, Abdullah, Moin, Tamrin, & Hashim, 2010).

Indeed, numerous studies have found the relationship between good mental health and health particularly MSD (Balakrishnan, Chellapan, & Thenmozhi, 2016; Rahimi, Vazini, Alhani, & Anoosheh, 2015; Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Zamri, Moy, & Hoe, 2017). Studies have found that those who had poor mental health has also an increased risk of having MSD (Rahimi, Vazini, Alhani, & Anoosheh, 2015). Given this, having good mental health (such as psychological health) and physical health (such as MSD) and vice versa is important (Balakrishnan, Chellapan, & Thenmozhi, 2016; Rahimi, Vazini, Alhani, & Anoosheh, 2015; mental health is positively related with dissatisfaction and stress at work among teachers (Kidger, Brockman, Tilling, Campbell, Ford, Araya, & Gunnell, 2016). Studies such as

(Balakrishnan, Chellapan, & Thenmozhi, 2016; Cardoso, Ribeiro, Araújo, Carvalho, & Reis, 2009; Chiu & Lam, 2007; Rahimi, Vazini, Alhani, & Anoosheh, 2015; Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Tavafian, Jamshidi, Mohammad, & Montazeri, 2007; Zamri, Moy, & Hoe, 2017) have reported that workers with poor mental health has an increased risk to develop MSD (Balakrishnan, Chellapan, & Thenmozhi, 2016; Cardoso, Ribeiro, Araújo, Carvalho, & Reis, 2009; Chiu & Lam, 2007; Rahimi, Vazini, Alhani, & Anoosheh, 2015; Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Tavafian, Jamshidi, Mohammad, & Montazeri, 2007; Zamri, Moy, & Hoe, 2017). Yet, not many studies have investigated this relationship particularly in Malaysia. Nevertheless, there is only one study that has reported the relationship between MSD and poor well-being (i.e. poor mental health) (Maakip, Keegel, & Oakman, 2017). However, Maakip Keegel, & Oakman (2017) study was among office workers and not with teachers. Given this, it is not known regarding the relationship between MSD and well-being (in this case, poor mental health) in Malaysia compared to developed countries such as North America, Europe and Australia (Ceballos & Santos, 2015; Ilgan, Ozu-Cengiz, & Akram, 2015; Maakip, Keegel, & Oakman, 2017).

Based on the above issues, there is a grave concern on the rising the number of MSD cases around the world. For example, MSD accounted for more than 41% of all occupational diseases in Great Britain (Health and Safety Executive, 2016) and 65.8% of all occupational diseases in Korea (Minister of Employment and Labor, 2017) as well as 40% of work-related health costs worldwide (Morken, Riise, Moen, Hauge, Holien, Langedrag, Pedersen, Saue, Seljebø, & Thoppil, 2003). In Malaysia, MSD among workers had increases from year to year and had the highest result in the year 2009 with 161 cases as shown in the annual report of Malaysia Social Security Organization (SOCSCO) 1995-2009. Nevertheless, MSD has increased up to 708 cases in 2015 as shown in the annual report of (SOCSCO) 2015. Hence, MSD has become a serious issue as the rate of occupational diseases that comprises musculoskeletal injuries at the workplace was greatly increased from year to year, particularly in Malaysia. These rapid increases makes the industries suffer from tangible and intangible losses due to increased in medication costs, decreased productivity, work quality and decreased worker morale (Bhattacharya, 2014; Piedrahita, Punnett, & Shahnavaz, 2004;). Viewing from this perspectives, it is clearly demonstrates the need and the importance to investigate the relationship between psychosocial factors, and MSD with depression as mediator among school teachers in Kuala Lumpur, Malaysia. The data collected from the study could aid in the setting up an intervention program in minimizing MSD problem that occurred among teachers.

RESEARCH OBJECTIVES AND RESEARCH HYPOTHESES

The present study had three objectives. Firstly, the study aimed to determine the prevalence of MSD among primary school teachers in Kuala Lumpur. Second, the study aimed to examine the relationships among psychosocial factors, depression and MSD among teachers. And third, the study aimed to explore depression as the mediator in the relationship between psychosocial factors and MSD. The study hypothesized that (a) psychosocial factors is directly and negatively related to MSD (b) psychosocial factor has an indirect effect on MSD through depression.

METHODS

Sampling procedures

This cross-sectional survey was conducted among primary school teachers in 15 primary schools in Kuala Lumpur. The present study employed probability proportional to size (PPS) cluster sampling technique, with a cluster size of 60 teachers from 15 primary schools; 367 primary school teachers participated in the study. The survey was conducted between May and June of 2017.

Sample

There were 367 respondents ($n=367$) that comprised 49 (13.4%) males and 318 (86.6%) females. Most of the respondents were married (66.2%) and from middle age group (age group of 31-40 (48%)). On average, the family income of respondents showed mean of RM3774.37 ($SD = 907.41$). Most of the respondents came from low to medium income families as the standard minimum cost of living is RM 2500 for East Malaysia; RM3500 - RM4000 for West Malaysia (The Malaysian Insider Team, 2013). As for level of education, the majority of the respondents' mothers received formal education up to Bachelor Degree (63.2%) and most of the respondents working experience were 10 years and above (47.1%). The respondents background show in Table 1. There was only one respondent in the age 16-20, who is a temporary school teacher which in 20 years old also participated in the present study.

Table 1: Respondents background

Variables	N (%)
Gender	
Male	49(13.4%)
Female	318(86.6%)
Marital status	
Single	121(33%)
Married	243(66.2%)
Divorce	3(0.8%)
Race	
Malay	175(47.7%)
Chinese	178 (48.5%)
India	12 (3.3%)
Kadazan	1 (0.3%)
Others (Punjabi)	1 (0.3%)
Level Education	
SPM	14(3.8%)
STPM	9 (2.5%)
Diploma	26 (7.1%)
Bachelor Degree	311 (84.7%)
Master Degree	7 (1.9%)
Age	
16-20	1 (0.3%)
21-30	99 (27%)
31-40	176 (48%)
41-50	56 (15.3%)
51 and above	35 (9.5%)
Working Experience (year)	
1-3	74 (20.2%)
4-6	51 (13.9%)
7-9	69 (18.8%)
10 and above	173 (47.1%)

INSTRUMENTATION

Instrumentation of Psychosocial factors

The respondents were required to answer the Work Organization Assessment Questionnaire (WOAQ) (Griffiths et al., 2006) that was used to assess workplace psychosocial hazards. The WOAQ scale contained 26 items on job control, job satisfaction, perceived stress level and

social support respectively. The instrument was a self-report questionnaire with a 5-point Likert type scale response format ranging from 1- major problem, to 5 - very good. The reliability of WOAQ was 0.93 (Maakip, Keegel, & Oakman, 2016) while the reliability of WOAQ in the present study was 0.92 which is very high.

Instrumentation of Depression

The presence of depressive symptoms was assessed using the Beck Depression Inventory for Malays (BDI-M) validated by Mukhtar and Oei (2008) with reliability of .71 to .91. One item from the original 21 item Beck Depression Inventory was discarded in the BDI-M due to cultural and religious perspective held by Malaysians (Mukhtar & Oei, 2008). A series of four-evaluative statements for each item are presented and respondents are to select the most accurate description of their findings during the past week including the day of data collection. Sample items included are "*kesedihari*" (sadness), "*rasa bersalah*" (guilty) and "*gangguan tidur*" (sleep disturbances). The Cronbach's alpha for BDI-M in the present study was 0.88.

Instrumentation of Musculoskeletal Disorder (MSD)

For the prevalence of MSD, it was assessed using a question that asked participants if they had experienced discomfort toward the end of their work day in the past six months, with a yes or no response (Oakman, Macdonald, & Wells, 2014). While Cornell Musculoskeletal Disorder Questionnaire (CMSD) will be used to assess the level of musculoskeletal discomfort. The CMSD is a 54-item questionnaire containing a body map diagram and questions about the prevalence of musculoskeletal ache, pain or discomfort in 18 regions of the body during the previous week. The Cronbach's alpha for CMSD was 0.94 (Maakip, Ng, & Peter, 2014) while the reliability of CMSD in the present study was 0.97 which is very reliable.

DATA COLLECTION

Prior to data collection, an application for a permission to conduct the present study at potential schools from the Ministry of Education and the State Department of Education were applied.. The researchers also contacted the potential schools and requested permission from the each of the potential school principals. The discussion with each of potential school principals were on the setting up the date and time for data collection. During the data collection, the researchers distributed a packet containing: a) information sheet, b) informed consent, and c) questionnaire. Then, the respondents were briefed regarding the study and gave their consent to participate. The respondents were then completed the self-administered questionnaire. In addition to the permission obtained from the Malaysian Ministry of Education, the State Education Department and the school principals, an ethical clearance was also acquired from the Human Ethics Committee, Universiti Kebangsaan Malaysia.

DATA ANALYSIS

The Statistical Package for Social Science (SPSS), version 23 was used to code and analyze the data, by applying Structural Equation Modelling (SEM) with Analysis of a Moment Structure (AMOS) version 24. The data analysis begun with the data screening using exploratory data analysis (EDA) to help in detecting errors, identifying outliers, and checking assumptions on

the normality of the distribution. The statistics that were used in EDA includes skewness, kurtosis, boxplot, Q-Q plot, and homogeneity of variance.

The descriptive and inferential statistics were computed in the analyses on the study objectives as outlined earlier. The descriptive statistics revealed the basic distributional characteristics of all the study variables. Exploratory Factor Analysis (EFA) was used to explore the interrelationships among a set of items at the beginning of the pilot test (Pallant, 2010). In addition, the researchers calculated the prevalence of MSD by using SPSS. Further, the magnitude and strength of the relationship between psychosocial factors, depression and MSD were assessed using the Pearson Product-Moment Correlation analyses. Finally, path analysis was employed to determine the strength of the path shown in the path diagrams (Hair, Black, Babin, and Anderson, 2010).

In order to test mediation, Baron and Kenny (1986) principle was used in which there are five assumptions that one must consider in establishing mediation. First of all, there is the significant relationship between the independent variable and the mediator. Second, there is a significant relationship between the independent variable and the dependent variable. Thirdly, there is a significant relationship between mediator and the dependent variable; and fourth, the mediator affects the outcome variable by controlling the independent variable. Finally, in order to establish a complete mediation, the effect of the independent variable on the outcome variable controlling for the mediator should be zero. Nevertheless, James and Brett (1984) stated that if there is a complete mediation, the third assumption should be modified by not controlling the initial variable, whereas if there is a partial mediator, the fourth assumption should be ignored (Baron & Kenny, 1986). Thus, Pearson correlation was used to meet first, second and third assumptions, while path analysis was employed to meet fourth and fifth assumptions. Full mediation is found when the direct effect becomes non-significant in the presence of the indirect effect, whereas partial mediation occurs when the direct effect is reduced, but still significant (Hair, Black, Babin, & Anderson, 2010). Thus, in order to evaluate the goodness of fit or the model of teachers' MSD, the root mean square error of approximation (RMSEA) with a cut-off value of less than .06 and the comparative fit index (CFI) with a cut-off value of .95 or above was reported to be considered as a good fit (Hu & Bentler, 1999).

RESULTS

Prevalence of MSD among teachers

In response to the question asking participants if they had experienced discomfort toward the end of the work day; a 6 month point prevalence of MSD was 80.1% (95% CI: 75.8% – 84.2%) with 80.5% of female and 77.5% of male teachers reporting discomfort in the preceding six months. Table 2 shows the frequency of MSD based on the body regions. The most experience MSD amongst participants was on their wrist (93.2%), followed by thigh (91.8%), upper arm (91.3%) and lower leg (90.5%).

Table 2: MSD based on body regions

Body Part	Percentage (%)
Neck	75.5 %
Shoulder	80.1%
Upper back	56.4%
Upper Arm	91.3%
Lower back	59.9%
Forearm	89.6%
Wrist	93.2%
Hip/buttocks	40.9%
Thigh	91.8%
Knee	88%
Lower leg	90.5%
Foot	87.7%

Relationships between Psychosocial Factor, Depression and Musculoskeletal Disorder

There were significant relationships between psychosocial factor, depression, and MSD (see Table 3).

Table 3: Correlates of psychosocial factor, depression and musculoskeletal disorder

Variable	Depression	Musculoskeletal Disorder
Psychosocial Factor	-0.25**	-0.17**
Depression	-	0.30**

** . Correlation is significant at the 0.01 level (2-tailed).

Mediating effect of Depression on the relationship between Psychosocial Factor and Musculoskeletal Disorder

When a direct path from the psychosocial factors to MSD was fixed to zero, the data were found to be acceptably fit to the model (RMSEA=.023; CFI=.990; p=.03). As illustrated in Figure 2, the squared multiple correlation (R^2) for depression and MSD were .06 and .10, respectively. This value indicates that 6% of the variability in depression can be explained by

psychosocial factor whereas psychosocial factor and depression explained 10% of the variability in MSD.

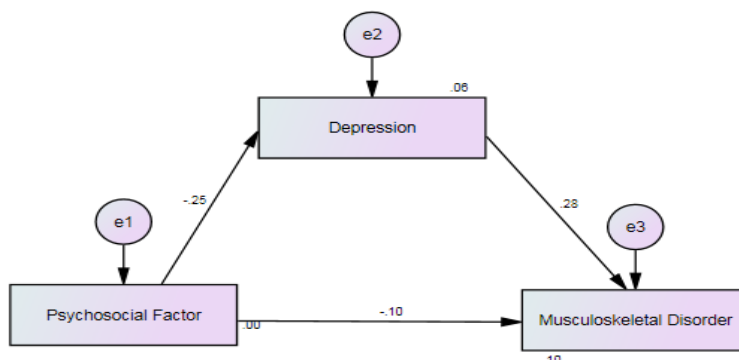


Figure 2: Path Analysis for the Path Model of Musculoskeletal Disorder among school Teachers

Table 4 shows that the direct effect from psychosocial factor to MSD was statistically significant at .01, while the direct effect from depression to MSD also statistically significant at .01. Given this, the results support the alternative hypotheses stating that psychosocial factor has a direct effect on MSD and depression has a direct effect on MSD. The indirect effect of psychosocial factor to MSD through depression was -.069. The non-zero confidence interval indicated that the indirect effect was statistically significant. Hence, the significant direct effect from psychosocial factor to MSD is reduced after the presence of depression. This result indicates that depression was a partial mediator. The result support the alternative hypothesis stating that psychosocial factor has an indirect effect on MSD through depression.

Table 4 Standardized direct and indirect effects on musculoskeletal disorder

Determinant	Standardized Regression coefficient	Standard error	Confidence Interval (95%)	
<i>Direct effects</i>				
Psychosocial Factor	-.101***			
Depression	-.247**			
<i>Indirect effects</i>				
Psychosocial Factor	-.069**	.022	-.115	-.032***

***Significant level at .01

**Significant level at .05

DISCUSSION

The first aim of this study was to determine the 6-month prevalence of MSD among school teachers in Kuala Lumpur. The prevalence of MSD was 80.1% (95% CI: 75.8% – 84.2%), with 80.5% of female and 77.5% of male teachers reported discomfort in the past six months

which have found a same result in the study conducted by Fjellman-Wiklund, Brulin, and Sundelin, (2003) among music teachers in Swedish (82% and 80%). This prevalence was similar with another study conducted by Erick and Smith (2014) among primary and secondary school teachers in Bostwana (83.3%). This finding is also consistent with Mohseni, Bandpei, Ehsani, Behtash and Ghanipour, (2014) study that found female teachers seemed to be more affected than their male counterpart. However, this prevalence was relatively higher when compared to others studies that have been conducted worldwide among school teachers (e.g. Cardoso, Ribeiro, Araujo, & Reis, 2009; Darwish & Al-Zuhair, 2013; Durmus & Ilhani; 2012; Korkmaz, Cavlak, & Telci, 2011). According to Chong and Chan (2010) conducted a study in China and they found that there was a higher prevalence of MSD among primary and secondary school teachers (95.1%).

The prevalence rate of MSD among teachers in this present study was consistent with the findings of previous studies undertaken in Malaysia. For example, the prevalence rate in developing country such as Malaysian studies on MSD among primary school teachers has been found to range between 40.4% and 74.5% (Anuar, Rasdi, Saliludin, & Abidin, 2016; Balakrishnan, Chellapan, & Thenmozhi, 2016; Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Zamri, Moy, & Hoe, 2017).

In order to answer the question "do psychosocial factors at work cause MSD", a lot of studies have been undertaken to examine this issue over the past 30 years. However, there were many conflicting results. For example, a systematic review by Hartvigsen, Lings, Leboeuf-Yde, & Bakkateig, (2004) disagree in their conclusion regarding the contribution of psychosocial and MSD. In addition, the studies (Bongers, de Winter, Kompier, and Hildebrandt, 1993; Bongers et al., 2000) found those psychosocial factors in the workplace such as repeated work, the burden of work and time pressure related to the musculoskeletal symptoms, especially in the body part of lower back as well as neck. While Hoogendoorn and colleagues (2000) found that there was a strong evidence showing that the risk factors for musculoskeletal disorders is low social support at work and low satisfaction among workers.

In addition, low control on the job and lack of social support by colleagues are positively associated with musculoskeletal disease. In the study conducted by Smedley, Inskip, Trevelyan, Buckle, Cooper, and Coggon (2003) stated that feelings of depressed or stress at baseline among nurses more likely will suffer the pain in the neck or shoulder in the future. In addition, tension which caused by anxiety and/or depression can increased the risk of experiencing in muscle tension and pain, change in the blood flow and oxygen supply, causing an increase in algosic substances in muscles, especially for those patients who suffering muscle pain in a long period of time. The relationship between psychosocial factors, depression and MSD is supported by previous studies in which chronic pain and depression often occur simultaneously, i.e. individuals who suffer from pain will have a higher risk of getting depression, and individuals who suffer from depression have increased the risk to experience pain (Gureje, Simon, & Von Korff, 2001). Likewise, from the opinion of those respondents mentioned that perceived psychosocial factors which was low may cause a person

to have a high depression rates and thus to develop the risk of MSD (Zamri, Moy, & Hoe, 2017).

Nevertheless, the results of the study found that depression was a partial mediator in the relationship between psychosocial factors and MSD. This supported the predicted hypotheses (a) psychosocial factors is directly and negatively related to MSD (b) psychosocial factor has an indirect effect on MSD through depression. Parallels can be drawn to a study of Kjellberg and Wadman (2007) found that there were significant relationship between psychosocial factors and MSD especially in the body part such as shoulder pain, neck pain and upper back pain. Further findings found that high job demands related to shoulder pain while low social support associated with neck pain and upper back pain. Upper back pain and lower back pain showed the same trend, however the relationship is weak as well as not significant.

There should be a relationship between psychosocial factor and depression which considered as second criteria. In the present study found that there was the relationship between depression disorder and musculoskeletal complaints in the upper limbs, lower limbs, and back. This findings supported by the study which conducted by Ji, Young, and Kwan (2015). While a study which conducted by Dersh, Gatchel, Polatin, and Maya (2006) found that an increased in mental health among patients with musculoskeletal disorders.

For the third requirement which is full mediation is found when the direct effect becomes non-significant in the presence of the indirect effect, and if the direct effect is less, but still significant, partial mediation exists. In the present study found that psychosocial factors and MSD were both significantly reduced after the presence of depression. According to Bair, Wu, Damush, Sutherland, and Kroenke (2008), musculoskeletal pain is much more disabling when depression was present. Several studies and reviews have assessed the impact of depression on MSD/pain (Balakrishnan, Chellapan, & Thenmozhi, 2016; Poleshuck, Bair, Kurt Kroenke, Damush, Tu, Wu, Krebs, & Giles, 2009; Rahimi, Vazini, Alhani, & Anoosheh, 2015; Samad, Abdullah, Moin, Tamrin, & Hashim, 2010; Zamri, Moy, & Hoe, 2017). They agreed that the co-occurrence between MSD and depression in which individual with pain are at increased risk for depression (Bair, Robinson, Katon, & Kroenke, 2003; Gallagher & Verma, 1999). Depression is associated with pain sites, greater pain intensity, longer duration of pain, and greater likelihood of poor treatment response in those patients with pain (Bair, Robinson, Katon, & Kroenke, 2003). In addition, social problems and disruption of work related with comorbid pain and depression were also reported in the literature. For example, comorbid pain and depression have reached up to 25% among patients in the Clinic of Neurology (Williams, Jones, Shen, Robinson, Weinberger and Kroenke, 2003). In addition, there was continuous basis of depression and pain for most of the patients after 12 months follow-up. Williams et al., (2003) also found that baseline pain severity and the degree of depression improvement were the most influential factor in the severity of pain from time to time.

Given this, it can be suggested that depression could be one of the predictors that associated with MSD among those in the teaching profession (Balakrishnan, Chellapan, & Thenmozhi, 2016; Cardoso, Ribeiro, Araújo, Carvalho, & Reis, 2009; Chiu & Lam, 2007;

Rahimi, Vazini, Alhani, & Anoosheh, 2015; Samad, Abdullah, Moin, Tamrin, & Hashim 2010; Smith, Mihashi, Adachi, Koga & Ishitake, 2006; Tavafian, Jamshidi, Mohammad, & Montazeri, 2007; Zamri, Moy, & Hoe, 2017). However, the present study was the first study that examines this relationship particularly in Malaysia.

STRENGTHS AND LIMITATIONS

The present study is one of the few studies that examined the prevalence and predictors associated with MSD among those in the teaching profession, particularly in developing countries such as Malaysia. However, the present study also have several limitations. Firstly, all variables were assessed using self-reports measure which a general negativistic opinion towards the work situation and health status might influenced the results. However, the reports were only from the teachers' views so it couldn't take as an accurate measures of the construct.

Secondly, depression was assessed with self-report measures without any further clinical interview or assessments to diagnose specific mental disorders. Lastly, the cross-sectional nature of the analyses limits the causal inferences regarding the relationship between psychosocial factors, depression and musculoskeletal disorder. However, the study findings are in line with the latest literature and suggest that the relationship between psychosocial factors, depression and MSD is robust.

CONCLUSIONS

Parallels can be drawn to the literature review, the findings from the present study support the idea that psychosocial factors and depression are significant predictors of MSD among teachers. MSD is much more disabling when depression is present as the co-occurrence between MSD and depression in which individual with pain are at increased risk for depression. Recommendations for future studies are based on the contributions and limitations as previously outlined. First and foremost is that the longitudinal studies are necessary to be able to draw firm conclusions about the causal relationships between predictors and MSD. Such studies would enable greater exploration of the relationship between others potential predictors and MSD. Secondly, understanding this relationship is valuable and will assist those teachers in in arranging, planning or actualizing preventive intervention programs in order to reduce the risk of MSD. This study also provides awareness for teachers and those parties involved such as Malaysian Ministry of Education regarding the issues of MSD at the workplace. Currently, procedures and guidelines on good ergonomic movements for industrial workers involved with manual handlings are readily available but not for teachers. Detailed and specific guidelines on good ergonomic guidelines for teachers are worth to be developed with the aim to minimize the prevalence and effects of MSD among teachers. Third, future intervention studies on how to reduce MSD among teachers is therefore warranted. In a nutshell, the study supported the hypothesis that depression at partially mediates the effects of psychosocial work conditions on MSD within the limits posed by its cross-sectional design. Given this, preventive measures on MSD should also take into account these two important

predictors i.e. psychosocial factors and depression in order to minimize the impact of MSD among those in teaching profession.

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RELATIONSHIP BETWEEN ACCULTURATION, IDENTITY, AND SELF-IDENTIFICATION AMONGST ZAINICHI KOREANS IN JAPAN

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ABSTRACT

This study aimed to clarify the relationship between acculturation, identity, and self-identification (subjective feeling about one's identity) amongst Zainichi Koreans in Japan. In addition, we explicated the relationship of these variables to psychological well-being. Participants included 182 Zainichi Koreans aged between 20 and 83 years ($M = 47.6$, $SD = 16.9$). Participants were divided into two groups: young- and older aged participants. In the older-aged group, no relationship was found between ethnic identity and host identity, ethnic orientation and host orientation, or ethnic self-identification and host self-identification. This implies that all the variables related to the ethnic and host domains were mutually "compatible." In the young-aged group, the stronger the Japanese self-identification, the less they identified with being Korean or the Korean culture. Thus, the young-aged group who self-identified as Japanese can be viewed as having an "assimilative" tendency. In both the young- and older-aged groups, ethnic-related factors predicted happiness. Given that maintaining ethnic-related characteristics predicted happiness, if the host society and population are tolerant of immigrants maintaining their ethnic commitment, and there are laws that support tolerance and ethnic diversity, immigrants as well as short-term residents would be able to live more comfortably in their resettlement society.

Keyword: acculturation, identity, well-being, Koreans



INTRODUCTION

The incidence of migration has increased considerably in recent years, with mass movements of people from their ethnic countries to resettlement countries. In these circumstances, migrants are treated as ethnic minorities in the host country, and they undergo acculturation as they attempt to maintain their ethnic heritage and culture while adopting the host culture (Berry, Kim, Power, Young, & Bujaki, 1989). In this context, acculturation may be defined as a behavioral or psychological change caused by contact between different cultural groups or individuals (Berry, 2005).

When evaluating immigrant acculturation, Howarth, Wagner, Magnusson, and Sammut (2014) noted that, when measuring acculturation, items on identity may be included or excluded. For example, Ting-Toomey et al. (2000) employed Berry et al.'s (1989) acculturation instrument in their measurement of ethnic/cultural identity. We acknowledge that some previous research has not distinguished between acculturation and identity concepts and that if the definition of a concept is unstable, any interpretation of that concept tends to be ambiguous. This study aimed to clarify the relationship between acculturation and identity; thus, it treated these two concepts as separate.

The concepts of identity and self-identification are mixed in the Zainichi Koreans' identity measure used by Im (2001). Thus, it could become difficult to distinguish between identity and self-identification. We treated identity, self-identification, and nationality as separate concepts in the current study. To assess ethnic self-identification, a single open-ended item is based on Phinney's (1992) Multigroup Ethnic Identity Measure (MEIM): "In terms of ethnic group, I consider myself to be ____." When measuring Zainichi Koreans' ethnic self-identification, a similar item that is frequently used is "I think of myself as Korean." With regard to self-identification, the current study employed a paired item to assess Korean self-identification and Japanese self-identification: "I think of myself as Korean/Japanese." This is necessary because Zainichi Koreans may not only have a Korean identity but also a Japanese identity (Harajiri, 1989).

While self-identification is a sense of subjective feeling toward one's identity, the concept of



identity that we adopted is reflected in items focusing on the emotional facets of identity such as “attachment” and “pride,” which are often employed to measure identity (e.g., Gong, 2007). Same as above with self-identification, we assessed both sides of identity—ethnic identity and host identity.

Overall, the purpose of this study was to clarify the relationship between identity, self-identification, and acculturation by treating these three concepts as separate. By doing so, these concepts that have been complexly intertwined in Zainichi Korean research would be clarified. If these concepts were clearly defined, then an explanation of how they relate to other variables would become clearer. Thus, we provide definitions of the three concepts and explored their relationships with each other and with psychological well-being. Consequently, factors related to Zainichi Korean’s psychological well-being would be identified with regard to these three variables.

The participants in the present study comprised Koreans living in Japan, called Zainichi Koreans, whose ancestors are largely former Japanese nationals under colonial rule (Fukuoka, 1993). Over a century has passed since Zainichi Koreans first settled in Japan, and the fifth-generation of Zainichi Koreans has now begun to emerge. Due to the likelihood of generational differences between young and older Zainichi Koreans in terms of recognizing their ethnic/host cultures or identities, this study separated participants into two groups: an older-aged group and a young-aged group.

METHODOLOGY

Participants and Data Collection

Initially, there were 184 participants in the study, but two were excluded due to uncertain data. Consequently, the participants comprised 182 Zainichi Koreans (91 men and 91 women) aged between 20 and 83 years ($M = 47.6$, $SD = 16.9$). While Zainichi Koreans can be divided into South Koreans and North Koreans, this study only included those from a South Korean heritage (thus excluding those of North Korean nationality), whom we labelled Zainichi Koreans in the current study. Furthermore, following Tani (2002), this study also included those who have become Japanese citizens through naturalization but who



nevertheless have a psychological tie to their Korean ethnicity within the scope of Zainichi Koreans.

Data were gathered from two sources. First, participants were recruited through the assistance of a local ethnic Korean community organization (called *Mindan*), which holds an event on August 15th each year to memorialize the liberation from Japanese colonial rule of the Korean Peninsula after 35 years (1910–1945). The first author visited this event and distributed 200 questionnaires; of these, 107 (54%) were completed on site. Second, participants were recruited from a Korean Mindan community that was different from the area in which the first group of participants were recruited. We selected this community because it is home to the largest numbers of Zainichi Koreans and we therefore anticipated a higher response rate. Two hundred questionnaires and prepaid return envelopes were distributed by mail; of these, 77 (39%) were returned.

Regarding ethical considerations, the goal of the research was explained to the participants and written informed consent was obtained from them. They were assured of the confidentiality of their personal information and responses. Participation was voluntary and participants' anonymity was secured. The survey was conducted in Japanese.

Measurements

The questionnaire was composed of items on acculturation, identity, self-identification, and psychological well-being. The response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The questionnaire also asked for background information on gender, age, and nationality.

Acculturation. Originally, 10 items in the survey pertained to ethnic and host country daily life practices or a sense of belonging. Seven items were adopted from a previous scale by Lee and Tanaka (2019) and three items were developed specifically for this study. As a result of a factor analysis on this scale, seven of the initial 10 items were retained, and two factors were generated: "Ethnic Orientation" and "Host Orientation" (see Appendix). The Ethnic Orientation Scale consists of four items related to Korean ethnic daily life, and an

example item is "I preserve Korean customs in my life." The Host Orientation Scale consists of three items related to a sense of belonging or closeness with Japanese people, and an example item is "I think of myself almost as a Japanese person." Cronbach's alpha was .58 for the Ethnic Orientation Scale and .54 for the Host Orientation Scale.

Identity and self-identification. We prepared separate items to assess ethnic identity and self-identification. Concerning measures of ethnic identity, previous studies in a Western context have emphasized the importance of emotional aspects rather than cognitive or behavioral aspects (Gong, 2007), and similarly, previous sociological research on Zainichi Koreans has been based on this perspective (Im, 2001). In the current study, in accordance with Phinney (1992), we used the terms "attachment" and "pride" for the ethnic and host groups or cultures to measure Zainichi Koreans' identity.

Three items were used for the Ethnic Identity Scale: attachment to the ethnic culture of Korea, attachment to the Zainichi Korean community in Japan, and pride in ethnic Korean traditions or culture. Regarding the Host Identity Scale, two items were prepared: attachment to the Japanese society where they have resided since their Korean ancestors resettled in Japan, and pride in Japanese traditions or culture. Attachment to an ethnic Zainichi Korean community was included in the ethnic identity domain because Zainichi Koreans can obtain psychological ties toward their ethnic Korean culture through such communities (Fukuoka, 1993). The Cronbach's alpha coefficient was .72 for the Ethnic Identity Scale and .61 for the Host Identity Scale.

To evaluate the extent to which Zainichi Koreans consider their self-identification to be Korean or Japanese, the item "I think of myself as Korean" was used for the ethnic self-identification domain, and the item "I think of myself as Japanese" was used for host self-identification.

Psychological well-being. The present study assessed both positive and negative aspects of psychological well-being. To measure positive aspects of psychological well-being, we utilized 12 items (e.g., "I think of my life as interesting") from the Subjective Well-Being

Scale developed by Ito, Sagara, Ikeda, and Kawaura (2003). The derived scale was labeled the Happiness Scale for this study, and the Cronbach's alpha was .85. To measure negative aspects of psychological well-being, we utilized seven items (e.g., "Sometimes I think that life is not worth living") from the Depressive Tendencies Scale developed by Sam and Berry (1995). The derived scale was labeled the Depression Scale, and the Cronbach's alpha was .89.

RESULTS

Participant Characteristics

Ninety-one men (50%) and 91 women (50%) aged between 20 and 83 and with a mean age of 47.6 ($SD = 16.9$) participated in the study. Many of the participants had retained their Korean nationality (94.5%).

Descriptive Statistics and *T*-Test Comparisons

To investigate differences by age group, we created two groups. Those aged between 20 and 49 ($n = 91$) were labeled the young-aged group, and those over 50 ($n = 91$) were labeled the older-aged group. A *t*-test was then conducted between these groups. The groups were divided in this way because the cross-tabulation analysis of age and generation demonstrated that most third- and fourth-generation participants (young-aged group) ranged in age from 20 to 49, while most first- and second-generation participants (older-aged group) were over 50.

Table 1 shows the significant differences between the two groups for the variables employed in this study. The young-aged group scored significantly higher in Japanese self-identification, $t(179) = 2.49, p < .01$, and Japanese identity, $t(178) = 2.73, p < .01$, than the older-aged group, and the score for host orientation of the young-aged group approached significance ($p = .08$) compared to the older-aged group. Korean identity and ethnic orientation scores were significantly higher in the older-aged group than in the young-aged group, $t(176) = -3.13, p < .01$, and, $t(174) = -2.39, p < .05$, respectively. However, no significant difference was found between the two groups in Korean self-identification scores, $t(180) = -0.93, n.s$. In addition, no significant differences were found

between the two groups on scores for depression, $t(165) = -.46$, n.s., and happiness, $t(169) = .94$, n.s.

Correlation Analysis

Results of the correlation analysis for both groups are shown in Tables 2 and 3. In the young-aged group, Korean self-identification was significantly negatively correlated with Japanese self-identification, $r = -.41$, $p < .01$, and significantly positively correlated with nationality, $r = .42$, $p < .01$. In other words, younger participants who endorsed a Korean nationality were more likely to have a higher score on Korean self-identification, while participants who endorsed a Japanese nationality were more likely to have a lower Korean self-identification score. In the older-aged group there was no significant correlation between Korean self-identification and Japanese self-identification, Japanese identity, host orientation, or nationality.

For the young-aged group, Japanese self-identification was negatively correlated with Korean self-identification, $r = -.41$, $p < .01$, Korean identity, $r = -.39$, $p < .01$, ethnic orientation, $r = -.24$, $p < .01$, and Korean nationality, $r = -.34$, $p < .01$. On the other hand, Japanese self-identification was positively correlated with host orientation, $r = .25$, $p < .05$, and Japanese identity, $r = .22$, $p < .05$. These results indicate that the stronger their Japanese self-identification, the less they identified with being Korean or Korean culture.

For the older-aged group, Japanese self-identification did not significantly correlate with Korean self-identification, Korean identity, or ethnic orientation. This finding is saying that the older participants' self-identification as Japanese had no relationship to their identity as Korean or with Korean culture.

Examining the correlation between the two axes of the three principal variables used in the current study, first, there was no relationship between ethnic orientation and host orientation on the acculturation axis for either group. Second, no correlation was found between ethnic and host identity on the identity axis in either group. Third, regarding the relationship between Korean and Japanese self-identification on the self-identification axis,

a negative relationship was found between the two variables in the young-aged group, $r = -.41$, $p < .01$, whereas no relationship was found in the older-aged group, $r = -.20$, n.s.

With regard to psychological well-being, in the young-aged group, happiness was positively associated with Korean identity, $r = .37$, $p < .01$, Korean self-identification, $r = .23$, $p < .05$, and ethnic orientation, $r = .25$, $p < .05$. In the older-age group, happiness was positively associated with Korean identity, $r = .22$, $p < .05$, and Korean nationality, $r = .25$, $p < .05$, and negatively associated with Japanese self-identification, $r = -.24$, $p < .05$.

Multiple Regression Analysis Predicting Happiness

We conducted a multiple regression analysis to identify which predictor variables contributed to each group's happiness. The results of the regression analysis are provided in Table 4. In the young-aged group, the independent variables accounted for 19% of the variance and a Korean identity was a significant positive predictor. In the older-aged group, the independent variables accounted for 21% of the variance and Japanese self-identification was a significant negative predictor of happiness, while Korean nationality was a significant positive predictor of happiness. There was no significant predictor of depression in either group.

DISCUSSION

The current study aimed to clarify the relationships between identity, self-identification, and acculturation, concepts that have been intertwined in previous studies, by dividing the sample into two groups according to age. Furthermore, we addressed the relationship between these three variables and psychological well-being. We discuss the findings for each of the groups below.

Older-Aged Group

No significant correlations were found between ethnic identity and host identity, between ethnic orientation and host orientation, or between ethnic self-identification and host self-identification in the older-aged group of Zainichi Koreans. This implies that all of the variables associated with the ethnic and host domains examined in this study were mutually



“compatible” in this group. In other words, it is possible to simultaneously hold positive attitudes toward ethnic attachment and pride and toward host country attachment and pride. Furthermore, self-identifying as Korean but also as Japanese are mutually compatible, while ethnic daily customs may coexist with a sense of belonging to the host nation. In sum, we infer that the older-aged group of Zainichi Koreans fluctuate flexibly between their Korean and Japanese identities or cultures. van Oudenhoven and Benet-Martínez (2015) offered a similar perspective, in which those who internalize both the ethnic and host cultures constantly move between different cultural orientations. The older-aged group of Zainichi Koreans could relatively internalize both the ethnic and host cultures (Harajiri, 1989).

A *t*-test demonstrated that the older-aged group scored significantly higher in Korean identity and ethnic orientation than the young-aged group. It can therefore be assumed that the older-aged group tends to value facets of their ethnic heritage more than the young-aged group. Merging this view that places importance on the ethnic domain into the above compatibility of awareness of both the ethnic and host domains, the older-aged group may have an integration attitude while emphasizing the ethnic domain. In a similar manner, a previous study by Alemi and Stempel (2018) reported that some immigrants center on ethnic culture and constantly negotiate both the ethnic and host cultures.

Although the older-aged group are able to go back and forth between two different cultures, the significant predictors of happiness were related to maintaining Korean nationality status, rather than acquiring Japanese nationality and not thinking of oneself as Japanese (i.e., Japanese self-identification). Possibly, older Zainichi Koreans have adopted a compatible orientation between the ethnic and host domains that could be a social-life strategy, although acted out only superficially. However, the basis for their happiness may be their strong sense of identity as Korean.

Young-Aged Group

In the young-aged group, although no relationship was found between ethnic identity and host identity, or between ethnic orientation and host orientation, a negative association was found between ethnic self-identification and host self-identification. In other words,

regarding identity and acculturation, the ethnic and host domains mutually coexist, whereas with self-identification the person would self-identify with one ethnic group while denying or rejecting the other. Additionally, the stronger the Japanese self-identification, the less they identified with being Korean or Korean culture (ethnic identity, ethnic orientation, and ethnic self-identification). By contrast, the stronger the Japanese self-identification, the more they identified with and were oriented towards Japanese people (Japanese identity and host orientation). Thus, it appears that the young-aged group who self-identify as Japanese exclude ethnic Korean aspects while proactively adopting Japanese attributes. This group can be viewed as having an “assimilative” tendency. Similarly, their assimilation attitude is suggested by a *t*-test finding that the young-aged group scored significantly higher in Japanese self-identification, host orientation, and Japanese identity than the older-aged group.

A similar prior study by Haritatos and Benet-Martinez (2002) stated that those who internalize both cultures less feel that they must choose between cultures. Most of the young-aged group had hardly internalized their ethnic Korean culture (Song, 2001), and tended to assimilate into the host Japanese culture with which they are familiar. This is particularly the case for the young-aged Zainichi Koreans who had been born and educated in Japan (Lee, 2011).

However, a predictive factor contributing to the young-age group’s psychological well-being was a Korean ethnic identity, which was defined as attachment and ethnic pride toward the society of Korea, attachment to the Zainichi Korean community in Japan, and pride in ethnic Korean traditions or culture. Thus, the findings suggest that the current life style of the young is one characterized by assimilation into Japan, but a contributing factor exerting a positive effect on their psychological well-being is their ethnic identity.

Limitations and Suggestions for Future Research

There are two limitations and suggestions for future research. First, regarding the low internal consistency reliability of the measures of acculturation, the Ethnic Orientation and Host Orientation Scales, we employed the scales based on content validity as they were



composed of items from the acculturation scale used in Lee and Tanaka's (2019) study on acculturation attitudes among Zainichi Koreans. Future studies should increase the number of scale items and produce a robust scale of acculturation suitable for Zainichi Koreans. Second, although the participants comprised a specific ethnic group in Japanese society, future studies should apply the current model, found through an empirical procedure using questionnaire data, to other permanent residents in Japan to verify the generalizability of the model.

CONCLUSION

This study aimed to clarify the relationships between identity, self-identification, and acculturation amongst two age groups of Zainichi Koreans. The results imply that the older-aged group adopt a "compatible" orientation between their ethnic and host identities or cultures, while the young-aged group may lean more towards an "assimilation" orientation. However, factors predicting their happiness were ethnic-related facets for both the young- and older-aged groups. Therefore, the current study contributes to our understanding of how an actual lifestyle and psychological well-being are separated among the ethnic minority population of Zainichi Koreans in Japan.

Applying this perspective to other societies, societies receiving immigrants could understand that immigrants' social life-strategy in their actual daily life (in their resettlement society) may be separated from their inner feeling of happiness. Given that ethnic-related characteristics predicted happiness in this study, if the host society and host population were to be tolerant of immigrants maintaining their ethnic commitment, and there are laws that support tolerance and ethnic diversity, immigrants as well as short-term residents would be able to live more comfortably in their resettlement society.

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Table 1 Means, standard deviations, and *t*-test results

Variables	Young-age group		Older-age group		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Japanese self-identification (<i>n</i> = 90, 91)	1.86	1.06	1.49	0.89	2.49**
Host orientation (<i>n</i> = 91, 90)	3.79	0.81	3.59	0.74	1.78 ⁺
Japanese identity (<i>n</i> = 91, 89)	3.68	0.85	3.34	0.81	2.73**
Korean identity (<i>n</i> = 89, 89)	3.84	0.87	4.21	0.71	-3.13***
Ethnic orientation (<i>n</i> = 89, 87)	2.99	0.75	3.25	0.69	-2.39*
Korean self-identification (<i>n</i> = 91, 91)	4.37	0.84	4.49	0.91	-0.93
Depression (<i>n</i> = 89, 86)	1.92	0.94	2.04	0.72	-0.46
Happiness (<i>n</i> = 89, 82)	3.67	0.63	3.59	0.57	0.94

Note. Where *n* is reported, the first number refers to the young-aged group and the second to the older-aged group.

p* < .05. *p* < .01. ****p* < .001. +*p* < .10.

Table 2 Correlations between variables for the young-aged group

	1	2	3	4	5	6	7	8
1. Nationality ($n = 91$)								
2. Korean self-identification ($n = 91$)	.42**							
3. Japanese self-identification ($n = 90$)	-.34**	-.41**						
4. Host orientation ($n = 91$)	.12	.07	.25*					
5. Ethnic orientation ($n = 89$)	.03	.30**	-.24*	-.15				
6. Japanese identity ($n = 91$)	-.05	.07	.22*	.57**	-.05			
7. Korean identity ($n = 89$)	.09	.45**	-.39**	-.09	.70**	.06		
8. Depression ($n = 89$)	-.04	-.11	.12	-.02	-.06	-.01	-.11	
9. Happiness ($n = 89$)	-.02	.23*	-.11	.05	.25*	-.02	.37**	-.60**

Note. Coding of nationality was as follows: Japan = 1, Korea = 2.

* $p < .05$. ** $p < .01$.

Table 3 Correlations between variables in the older-aged group

	1	2	3	4	5	6	7	8
1. Nationality ($n = 89$)								
2. Korean self-identification ($n = 91$)	.07							
3. Japanese self-identification ($n = 91$)	-.24*	-.20						
4. Host orientation ($n = 90$)	-.10	.00	.22*					
5. Ethnic orientation ($n = 87$)	.06	.28**	-.13	-.04				
6. Japanese identity ($n = 89$)	-.18	-.05	.29**	.69**	.09			
7. Korean identity ($n = 89$)	-.01	.36**	-.17	.03	.61**	.14		
8. Depression ($n = 86$)	-.20	-.06	.11	-.13	.02	-.01	-.11	
9. Happiness ($n = 82$)	.25*	.08	-.24*	.16	.11	.16	.22*	-.55**

Note. Coding of nationality was as follows: Japan = 1, Korea = 2.

* $p < .05$. ** $p < .01$.

Table 4 Multiple regression analysis predicting happiness for young- and older-aged groups

Young-aged group		Older-aged group	
Happiness		Happiness	
Predictor variable	β	Predictor variable	β
Gender	.11	Gender	.01
Nationality	-.08	Nationality	.22*
Korean self-identification	.14	Korean self-identification	-.01
Japanese self-identification	.02	Japanese self-identification	-.27*
Ethnic identity	.39**	Ethnic identity	.13
Host identity	-.16	Host identity	.15
Host orientation	.15	Host orientation	.16
Ethnic orientation	-.03	Ethnic orientation	-.06
$R^2 = .19^*$		$R^2 = .21^*$	

* $p < .05$. ** $p < .01$.

Appendix

The results of the factor analysis of acculturation (after Promax rotation)

No.	Item	Factor 1 ($\alpha = .58$)	Factor 2 ($\alpha = .54$)
1.	I know Korean politics and society well.	.600	.102
2.	I preserve Korean customs in my life.	.578	-.010
3.	I celebrate Korean holidays and anniversaries.	.528	-.080
4.	Korean food matches my taste most.	.349	.015
5.	I do not feel that Japanese people have a heterogeneous existence to me.	-.025	.590
6.	I think of myself almost as a Japanese person.	-.155	.559
7.	I build trustful interpersonal relationships with the Japanese people around me.	.194	.511
Contribution rate (%)		18.11	29.83
Factor correlation = -.203			

THE ROLE OF CAREER DECISION-MAKING SELF-EFFICACY FOR THE EFFECTIVENESS OF MESSAGE FRAMING AMONG JAPANESE FEMALE UNDERGRADUATES

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ABSTRACT

This study aimed to determine the role of career decision-making self-efficacy (CDMSE) in the effectiveness of gain- or loss-framed messages about career decision-making behaviors. A total of 256 Japanese female undergraduates aged 18–24 participated in this cross-sectional study. Main measurements included CDMSE scores, career decision-making ability scores, and stages of change for career decision-making behaviors. Participants also chose one of two messages (gain- or loss-framed) that they felt more effectively enhanced their motivation or intention to adopt career-related behaviors. Results of analysis of covariance showed that participants with higher CDMSE scores significantly preferred gain-framed messages. However, moderation analysis demonstrated no significant effect of the interaction between CDMSE and message framing on career decision-making behaviors.

Keyword: career decision-making self-efficacy, message framing, analysis of covariance, moderation analysis, female undergraduates

INTRODUCTION

A growing body of evidence has suggested that optimal career decision-making among undergraduates may affect their psychosomatic health positively. Gadassi, Waser, and Gati (2015) revealed that both men and women who experience great difficulties in career decision-making tend to suffer from depression more. In addition, there were no associations between the crystallization of career preference and depressive symptoms in women. On the other hand, although women have concrete orientations for their careers,

they may experience gender inequity and/or work-family conflict (D'Arimento, Witte, Dutt, Wall, & McAllister, 2019; Guille, Frank, Zhao, Kalmbach, Nietert, Mata, & Sen, 2017). Consequently, more attention should be paid to strategies to enhance women's career development during early stages.

Written persuasive messages are an effective mechanism to enhance career-related cognition. Studies have revealed that persuasive messages affect career decision-making self-efficacy (CDMSE) (Luzzo, Funk, & Strang, 1996; Luzzo & Taylor, 1993). When using such persuasive messages, it is imperative to consider the content or type of message that will effect change. Tversky and Kahneman (1981), in a prospective theory, showed that the effectiveness of persuasive message varies in terms of message framing. In other words, the content of a message can be differentiated in two basic ways: While a gain-framed message highlights the benefits of engaging in a target behavior, a loss-framed message emphasizes the costs of not engaging in a target behavior. In the field of career development, relatively little is known about the effect of message framing. Tansley, Jome, Haase, and Martens (2007) explored the effect persuasive messages have on undergraduates' career decision-making cognitions and behaviors. Although they concluded that the two types of message did not differentially affect their career cognitions, the participants who received the loss-framed message engaged in more career-related behaviors after a week.

Recently, various studies in health psychology have demonstrated that self-efficacy moderates message framing effects (van't Riet, Ruiters, Werrij, & Vries, 2010b; van't Riet, Ruiters, Werrij, & Vries, 2008). However, no research has yet examined whether such a moderational role has also been observed in CDMSE among female undergraduates. The purpose of this study was twofold. First, the relation between the level of CDMSE and message preference was characterized. Second, the moderational role of CDMSE in relation to the effectiveness of message framing was examined.

METHODOLOGY

Participants and Procedures

The participants included 256 female undergraduates at a women's university in Japan. Their ages ranged from 18 to 24 years ($M= 19.40$, $SD= 1.14$). Prior to responding to a set of questionnaires, the purpose of the study was explained to the participants.

Furthermore, they were assured that their information would remain confidential and no personal identifiable information would be collected. This study was approved by the Ethical Review Committee of Atomi University.

Measurements

Career-related behaviors.

The stages of change model were employed to assess the degree of the career-related behaviors of participants. According to Prochaska and Velicer (1997), stages of change describe the individual's level of motivation for the target behavior. This is based on their cognition or actual behavior, which is typically classified into five stages. Stages of change in career decision-making behaviors were determined by selecting the stage that was applicable to the participant. In the first stage, the precontemplation stage, the participant has no interest in engaging in any career decision-making behaviors. In the second stage, the contemplation stage, the participant has an interest in engaging in career decision-making behaviors within six months. In the third stage, the preparation stage, the participant intends engaging in career decision-making behaviors within 30 days. In the fourth stage, the action stage, the participant started engaging in career decision-making behaviors less than six months previously. In the final stage, the maintenance stage, the participant started engaging in career decision-making behaviors more than six months previously.

Career decision-making self-efficacy.

The Japanese version of the CDMSE Scale (Urakami, 1995) was used. The items comprise brief sentences related career decision-making. Examples include "To assess the ability of myself accurately" and "To imagine the ideal job for myself." Participants rate a total of 30 items on a 4-point Likert scale ranging from 1 (no confidence) to 4 (complete confidence). Urakami (1995) noted that the scale demonstrates high internal consistency ($\alpha = .88$) and 2-weeks test-retest reliability ($r = .81$).

Message framing.

According to Tansley et al. (2007), there are two types of instructional messages, namely, positive-framed and negative-framed messages. These messages should contain factually equivalent information that differs only in depiction (Kahneman & Tversky, 1979). An example of a positive-framed message is, "If you engage in more career-related activities, you'll succeed in your career in the future." In contrast, an example of a negative-framed

message is, "If you don't engage in career-related activities right now, you will fail in your career in the future." The participants chose one of two messages, which they felt enhanced their motivation or intention to pursue career-related behaviors effectively. If they were unaffected by message framing, they chose the option, "I don't perceive any significant difference between these two messages."

Statistical Analysis

First, descriptive statistics were examined for all variables of interest in this study. Subsequently, the difference of CDMSE scores between groups based on the preference of message-framing was analyzed by analysis of covariance (ANCOVA). The stages of change for career-related behaviors were treated as a covariate. The moderational role of CDMSE was examined by using hierarchical regression analyses. All data were analyzed by employing IBM SPSS Statistics ver. 24.0.

RESULT

Demographic Characteristics of Participants

In **Table 1**, the distribution of variables between groups based on their preference of message-framing is presented. Of the participants, 62.89%, 14.45%, and 22.66% were classified in the gain-framed message (GM) group, loss-framed message (LM) group, and no difference group, respectively. A chi-square test was conducted to examine whether there were significant differences between the groups and the stages of change for career-related behaviors. Results revealed no significant difference was obtained ($\chi^2 = 10.02, n.s.$). Furthermore, analysis of variance revealed that participants classified in the action and maintenance stages had higher CDMSE scores than those in the first three stages ($F = 5.03, p < .01$).

Table 1 Demographic Characteristics of Participants

	Precontemplation stage (PC)	Contemplation stage (C)	Preparation stage (P)	Action stage (A)	Maintenance stage (M)	Chi-square ^a F-value ^b	Multiple comparisons
Gain-framed message group	37 (22.98%)	40 (24.84%)	12 (7.45%)	47 (29.19%)	25 (15.53%)	^a 10.01	-
Loss-framed message group	14 (37.84%)	5 (13.51%)	2 (5.41%)	11 (29.73%)	5 (13.51%)		
No difference group	15 (25.86%)	15 (25.86%)	3 (5.17%)	18 (31.03%)	7 (12.07%)		
CDMSE scores	72.02 ±14.24	75.00 ±12.45	70.06 ±8.50	78.54 ±12.22	81.87 ±15.22	^b 5.03**	M > PC, C, P A > PC

** $p < .01$

CDMSE: career decision-making self-efficacy

Analysis of Covariance

The results of ANCOVA between the three groups of message preference are displayed in **Table 2**. The CDMSE scores after controlling the effect of stages of changes for career-related behaviors differed significantly across the three groups ($F = 7.69, p < .01$). Multiple comparisons revealed that the participants in the GM group had higher CDMSE scores than those of the LM group.

Table 2 Results of ANCOVA of CDMSE Scores

	Gain-framed message group (GM)	Loss-framed message group (LM)	No difference group (ND)	F-value	Multiple comparisons
CDMSE scores	76.66 ± .76	72.90 ±1.59	74.71 ±1.26	7.69**	GM > LM

** $p < .01$

CDMSE: career decision-making self-efficacy

Covariates: Stages of change for career-related behaviors

All scores are adjusted mean ±standard error.

Moderation Analysis

Hierarchical regression analyses were conducted to examine the moderational role of CDMSE on the message-framing effect (**Table 3**). Groups of message preference and CDMSE scores were included in the first step. In the second step, the interaction of these two variables was added. In the first step, CDMSE had a significant effect on the stages of changes for career-related behaviors ($\beta = .25, p < .01$). However, there was no significant effect of interaction ($\beta = .17, n.s.$) and no significant change of coefficient of determination ($\Delta R^2 = .01$,

n.s.) in the second step. Thus, the moderational effect of CDMSE was not demonstrated in this study.

Table 3 Results of Hierarchical Multiple Regression Analyses

Step	included variables	β	R^2	ΔR^2
1	groups of message preference	.02	.06	.07
	CDMSE scores	.25**		
2	groups of message preference × CDMSE scores	.17	.06	.01

** $p < .01$

CDMSE: career decision-making self-efficacy

DISCUSSION

This study was conducted to examine the relation between the level of CDMSE and message preference and demonstrate the moderational role of CDMSE in the effectiveness of message framing.

First, in relation to the stages of change for career-related behaviors, the participants classified in the action and maintenance stages had higher CDMSE scores than the first three stages. The results concurred with the findings of previous studies in that self-efficacy increases gradually in accordance with the progression of the stages of change (Dijkstra, de Vries, & Bakker, 1996; Marcus, Selby, Niaura, & Rossi, 1992). This finding implies that career-related behaviors among female undergraduates could be in accordance with the components of the transtheoretical model (Prochaska & Velicer, 1997).

The study further revealed that gain-framed persuasive messages were more acceptable among female undergraduates who had high CDMSE. Previous studies have demonstrated that GMs were capable of enhancing the amount of physical activities effectively (Latimer, Rench, Rivers, Katulak, Materese, Cadmus, Hicks, Hodorowski, & Salovey, 2008; Parrott, Tennant, Olejnik, & Poudevigne, 2008). Although these studies did not consider the level of self-efficacy for physical activities, the effectiveness of GMs was partially replicated in the present study. However, this finding does not concur with van't Riet, Ruiters, Smerecnik, de Vries' (2010a) findings. They found that LMs worked more effectively with a specific health behavior, namely, decreasing salt intake than GMs only when individuals had high self-

efficacy. In addition, Tansley et al. (2007) reported that LMs could enhance career-related behaviors among college students regardless of their level of CDMSE. One possible explanation for this study's results is the effect of verbal persuasion, which is an information source of self-efficacy. According to Bandura (1997), verbal persuasion can bolster self-change if the positive appraisal is within realistic bounds. Participants who have high CDMSE are able to imagine their career more positively. Consequently, they are able to accept positive contents of messages, for example, GMs.

In this study, CMDSE failed to moderate the effect of message-framing on career related behaviors. This finding contradicts van't Riet et al. (2010b) who found that self-efficacy moderates message-framing effects of healthy behavior. They also implied that the interaction between self-efficacy and message-framing on healthy behavior was not mediated by the acceptability of the message (2010a). Updegraff and Rothman (2013) revealed the significance of considering moderators and mediators to reveal the regulation process of messaging effects. It is thus recommended that future research explore how the acceptability or usability of message-framing contributes to enhancing career-related behaviors as well as other moderators of framing effects.

This study has limitations. First, the participants included only female undergraduates. Further research should examine whether the same results can be obtained with male undergraduates. Second, although two types of framed messages seemed to contain appropriate content, their equivalence was not examined adequately. Thus, it is recommended that further research is needed to test the manipulation of the impact of those two messages.

CONCLUSION

The findings of this study suggest that GMs have sufficient acceptability for female undergraduates who have high CDMSE. In addition, further testing in relation to the role of CDMSE as a moderator with more sophisticated analyses may offer better insights of the framing effect on career-related behaviors. In essence, despite some limitations, the study represents an important first step in understanding message-framing on career-related behaviors among female undergraduates.

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SOCIAL PARTICIPATION REDUCES DEPRESSION AMONG COMMUNITY-DWELLING OLDER ADULTS WITH LOWER BACK PAIN: A CROSS-SECTIONAL STUDY

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ABSTRACT

This study examined the interactive effects of lower back pain (LBP) and social participation on depression among community-dwelling older adults. The subjects consisted of 744 older adults living in Toshima ward, an urban area in Tokyo, who received comprehensive health checkups and completed all the assessments at least once between 2014 and 2016. We classified the subjects into four groups according to LBP and social participation. The depression level was assessed by the Geriatric Depression Scale-15. The interactive effects of LBP and social participation on the odds of being depressed were examined using multivariate logistic regressions. The prevalence rates for LBP and depression were 37.9% and 20.3%, respectively. The number of subjects and the prevalence rate of depression for each group were as follows: non-participants with LBP (n=129, 33.3%), participants with LBP (n=153, 20.9%), non-participants without LBP (n=210, 19.0%), and participants without LBP (n=252, 14.3%). Compared to non-participants with LBP, the participants with LBP showed a significantly lower risk of depression (OR=0.53), as well as non-participants without LBP (OR=0.51). Participants without LBP had the lowest risk of depression (OR=0.34). Encouraging participation in social activities may reduce depression among older adults with LBP.

Keywords: lower back pain, social participation, depression, older adults

INTRODUCTION

Lower back pain (LBP) is a common musculoskeletal pain in older adults. In Japan, almost half of the community-dwelling older adults complain of LBP. LBP in old age leads to not only physical function decline but also mental disorders, such as depression¹. In older adults, depression worsens the health-related quality of life, increases medical costs and mortality. Even though social participation decreases the risk of depression, LBP patients are less likely to participate in social activities². According to Owari et al., the relationship between LBP and mental health is mediated by social participation; therefore, promoting social participation for older adults with LBP may reduce mental distress or depression³. However, no study has evaluated the degree of reduced depression by social participation among older adults with LBP. Thus, we aimed to investigate the interactive effects of LBP and social participation on depression among community-dwelling older adults.

METHODOLOGY

The subjects consisted of 744 older adults living in Toshima ward, an urban area in Tokyo, Japan. They received comprehensive health checkups and completed all the assessments at least once between 2014 and 2016.

Social participation was defined by participation in social group activities (community associations, senior clubs, hobbies, sports, and volunteering) at least once a month. LBP was assessed by self-report. The depression level was assessed by the Geriatric Depression Scale-15, with a score of ≥ 6 indicating depression. Then, we classified the subjects into four groups according to LBP and social participation (participants with and without LBP, and non-participants with and without LBP).

The interactive effects of LBP and social participation on the odds of being depressed were examined using multivariate logistic regressions adjusted for age and sex.

RESULT

The mean age of subjects was 74.2 ± 5.4 years; 66.5% were women. The overall prevalence rates for LBP and depression were 37.9% and 20.3%, respectively. The number of subjects and the prevalence rate of depression for each group were as follows: non-participants with LBP ($n=129$, 33.3%), participants with LBP ($n=153$, 20.9%), non-participants without LBP ($n=210$, 19.0%), and participants without LBP ($n=252$, 14.3%).

Compared to non-participants with LBP, the participants with LBP showed a significantly lower risk of depression (odds ratio [OR]: 0.53, 95% confidence interval [CI]: 0.31-0.92), as well as non-participants without LBP (OR: 0.51, 95% CI: 0.30-0.84). Participants without LBP had the lowest risk of depression (OR: 0.34, 95% CI: 0.21-0.58).

DISCUSSION

Even in older adults with LBP, those who participate in social group activities have reduced depressive symptoms compared to those who do not. The degree of reduction was comparable to those who do not participate in social group activities and do not have LBP. Previous studies reported that social participation lowered the risk of depression in older adults⁴. The result of this study was consistent with these findings and had extended them to LBP patients.

LBP in old age is mostly caused by irreversible musculoskeletal change with aging. Therefore, it is necessary to acquire skills to cope with the pain that is difficult to cure. Social participation provides older adults with access to social support and has physiological benefits such as buffering stress⁵. Participating in social group activities may be one of the coping skills to deal with depression caused by pain in older LBP patients.

We could not establish causal relationships between LBP, social participation, and depression because this study was based on cross-sectional data. In the future, we will examine these relationships in a longitudinal study.

CONCLUSION

Encouraging participation in social activities may reduce depression among older adults with LBP. When considering the treatment of LBP in older age, which is difficult to cure completely, promoting social participation along with medical treatment may be effective.

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SOCIAL SUPPORT IN NURSING CARE OF TUBERCULAR PATIENTS IN CENTRAL JAVA, INDONESIA TOWARDS IMPROVED PATIENT'S WELL-BEING

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ABSTRACT

Social support is essential factor that support tubercular patient in maintaining self-care. The availability of support from other people will provide positive emotional effect on tubercular patient particularly on making healthier choices during treatment. While, nurses provide comprehensive nursing care plan to accommodate patient and family needs, their most important roles is to provide information to ensure that families and patient understand the treatment of tuberculosis. Thus, this study aims to identify social support that is extended to tubercular patients. Findings were beneficial in improving patient's well-being.

This study used quantitative-descriptive research design which included a total sample of 40 respondents that were purposively selected from the tubercular inpatients and outpatients at Dr. Ario Wirawan Pulmonary Hospital. The results showed that Majority of the respondents were between the age of 41 – 50 years old, of which 40% are inpatients and 45% are outpatients. Incidence of tuberculosis is greater among male patients with about 70% for the inpatients and 55% for outpatients. Both inpatient (75%) and outpatient (90%) tubercular patients are married in which their spouses are the principal supplemental care providers from the family in addition to nurses and doctors. Most of the respondents present new cases of tuberculosis for both inpatients (30%) and outpatients (35%).

Based on the results of the study, self-assessed social support among tubercular respondents showed that they receive high support of social support from their care providers and families. On significant difference in the self-assessed social support among selected inpatient and outpatient tubercular respondents, statistical analysis confirmed there is no significant difference in the self-assessed social support selected inpatient and outpatient tubercular respondents. Information education and communication (IEC) materials were developed for health promotion to improve patients well- being.

Keywords: Social Support, Tubercular Patients

INTRODUCTION

The capability of a person to maintain health is not just about fulfillment of physical needs but also physiological aspect. Interaction with others is needed especially for people with illness. The process of health recovery entails interaction with friends and professional care providers as well as involvement of family in decision-making process (Hoorn et al, 2015). The community surrounding patient such as family, friends and significant others, are the most significant provider of social support that important particularly for those patients with infectious disease like tuberculosis (TB) that require long-term care and extended treatment (Aydemir, 2015).

Patients with tuberculosis may experience anxiety leading to mental health disorder because of the nature of treatment and the burden of infectious disease, hence coping becomes ineffective in the curative process. Mechanisms for delivery of integrated tuberculosis patient care and other services need to be established not only to address medical issues, but also keep in mind concurrent social care and support needs (Amiya, 2014). Implementing integrated services is intended to increase access to TB services, improve the timeliness of service delivery as well as increase the effectiveness of efforts to prevent infectious diseases and disorders that share common risk factors, behaviours, and social determinants.

According to Dwyer (2002), support can be enhanced by social relationship that is essential to health recovery of tubercular patient. Social support comes from people surrounding the patients, that give positive support to the patient. This interaction, has a tremendous impact among TB patients because it encourages patients to sustain continuous treatment and eventually get motivated to maintain self-care (University Research Co.,LLC, 2017).

Some of the nursing management for patients with chronic pulmonary disease such as TB primarily include social support (University Research Co.,LLC, 2017). Family needs to know patient's exact condition to be able to partake in providing care from hospital confinement to home rehabilitation. Lack of knowledge about TB has a correlation with sustained and managed treatment especially on administering medications (Masry et al, 2014). Study in South Western Utopia (Bati, 2013) had indicated that community knowledge about causative agent and symptom of TB can also impact practice and outcome of preventive care of tuberculosis.

Social support in nursing care is essential factor that support tubercular patient in maintaining self-care. The availability of support as a positive assistance from other people will provide positive emotional effect on tubercular patient. Social support plays a significant impact one's ability to make healthier choices during treatment. Thus, this study aims to identify social support in nursing care that are extended to tubercular patients. Findings are expected to be beneficial in improving patient's well-being.

LITERATURE REVIEW

a. Epidemiology of Tuberculosis in Indonesia

Surveys about tuberculosis in Indonesia, have been conducted since 1983- 1993 in six provinces. This study showed that the prevalence of TB in Indonesia ranges from 0.2% until 0.65%. Meanwhile, according to the global tuberculosis control report issued by WHO

in 2004, the TB incidence rate in 2002 reached 555.000 cases (256/100.000 population), and 46% of them thought to be new cases. Estimates of the prevalence, incidence and mortality from tuberculosis is based on the analysis of all available data, such as the reporting of cases, the prevalence of infection and illness, duration of illness, the proportion of smear- positive cases, the number of patients who received treatment and who did not receive treatment, the prevalence and incidence of HIV, mortality rates and demographics. (Kementrian Kesehatan Republik Indonesia, 2017)

According to Information and Data Center of Indonesia Health Ministry (2016), tuberculosis (TB) is the one of infectious disease that increase morbidity and mortality in Indonesia. The rapid of transmission, longer time for treatment, or death become triggering factors to make this disease as main intervention especially for the developing countries like Indonesia. However, Indonesia has an opportunity in 2015 to decrease number of morbidity and mortality of tuberculosis in range 50% lower than total cases in 1990. The prevalence of cases in 1990 are 443 per 100.000 inhabitant, while reducing target in 2015 are 280 per 100.000 inhabitant (Pusat Data dan Informasi, Kementrian Kesehatan RI, 2016)

TB is complex health problem. TB is influence by socio demographic factor such as age, gender, culture, education level and financial economic in the countries. That factors becoming resistor for healing of the patients with TB and increasing other complication of disease that is Multi Drug Resistant Tuberculosis (MDR- TB). MDR- TB is a condition where patient become resistant to antibiotic of TB. Besides that, number of MDR-TB is around 2% from total new cases. This number is lower than regional estimate which is 4% and 20% from TB cases with repeat treatment. Indonesian Health department was estimated that MDR-TB cases in Indonesia around 6.300 cases. This is the reason that Indonesia in the fifth place as a as a higher prevalence of tuberculosis in the world in 2010.

b. Knowledge, attitude and behaviour about tuberculosis

Prevention and rehabilitation of patients with tuberculosis are supporting by community. Based on the report about knowledge, attitude and behaviour, 96 % of families are taking care of tubercular patient, and only 13% families are hiding the cases. Besides that, families were informed about tuberculosis and made aware that tubercular patient can be healed, however 26% families from total respondents can identity only two signs and symptoms of tuberculosis. On knowledge about tuberculosis, 51% families understand about transmission of disease and only 19% families know that tuberculosis drugs are free. Community understanding about transmission of Tuberculosis disease is related with myth in communities. Communities believe that tuberculosis can be infected by smoke, alcohol consumption, tired, eating junk food, sleep on the floor and sleep lately.

Masry et al (2014), presented that family support has an impact to the treatment of tuberculosis. The research was an observational study with cross sectional design. From the findings of the research, it was concluded that: There was family support influence to compliance rate to take anti tuberculosis drugs. Further analysis showed that 4 variables of family support in this research (encouragement to go to clinic, family not staying away from the sufferer, transportation support, and attention to success of medical treatment)

towards compliance to taking anti tuberculosis drugs, the biggest effort variable was attention to success of medical treatment, transportation support, encouragement going to clinic, and the last family not avoiding the sufferer.

Families and relatives are taking part of social support for tubercular patients. the Theory of Cohen (as cited in Petterson and Bredow, 2013) present the conceptual framework of social and interpersonal support by Peterson and Bredow (2013) that addresses the structure and in an interactive relationship which correlates the impact towards health status, health behaviour and utilization of health services towards patient’s healing process. Poor compliance to the treatment is most frequently encountered during treatment process due to lack of social and family support compounded by the associated stigma of the illness (Peterson and Bredow, 2013).

Social supports are often differentiated in four types of resources (Cohen, as cited in Petterson and Bradow, 2013). These include:

- a. Tangible support refers to provision of material aid or assistance with daily tasks.
- b. Appraisal support refers to provision of guidance/ advice, sharing knowledge as a problem solving
- c. Belonging support refers to presence of companions to engage in shared social activities
- d. Emotional support refers to empathy, caring, acceptance, concern, reassurance, and trust that provides opportunity for emotional venting

The relationship of social to the physical and physiological process is presented through a framework illustrated below:

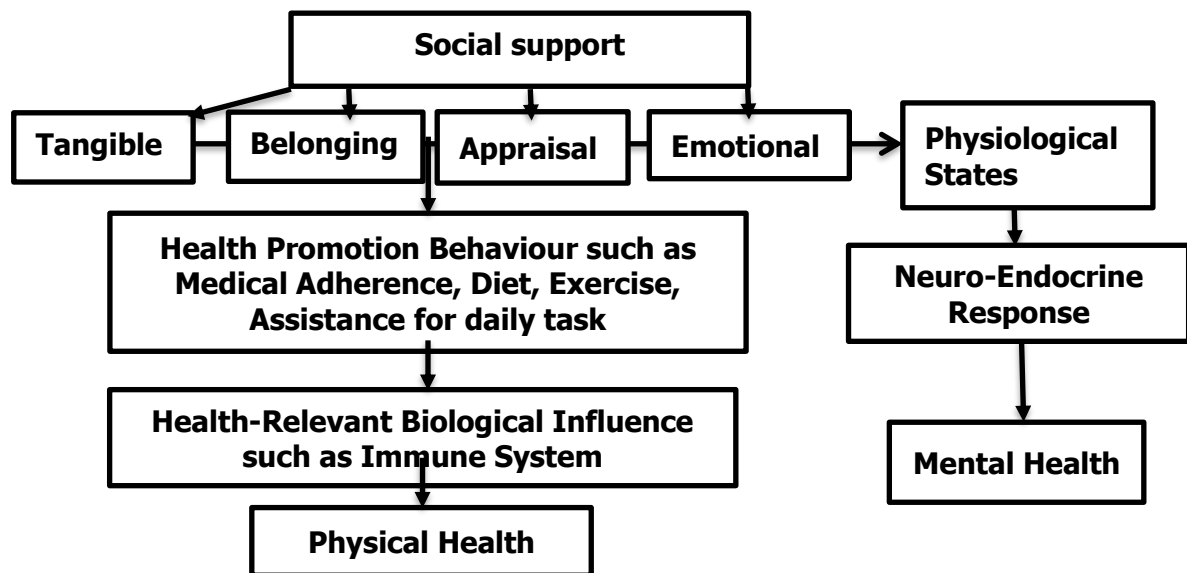


Figure 1. Conceptual Framework of Social and Interpersonal Relationship Influence Physical and Physiological Health

Research Paradigm

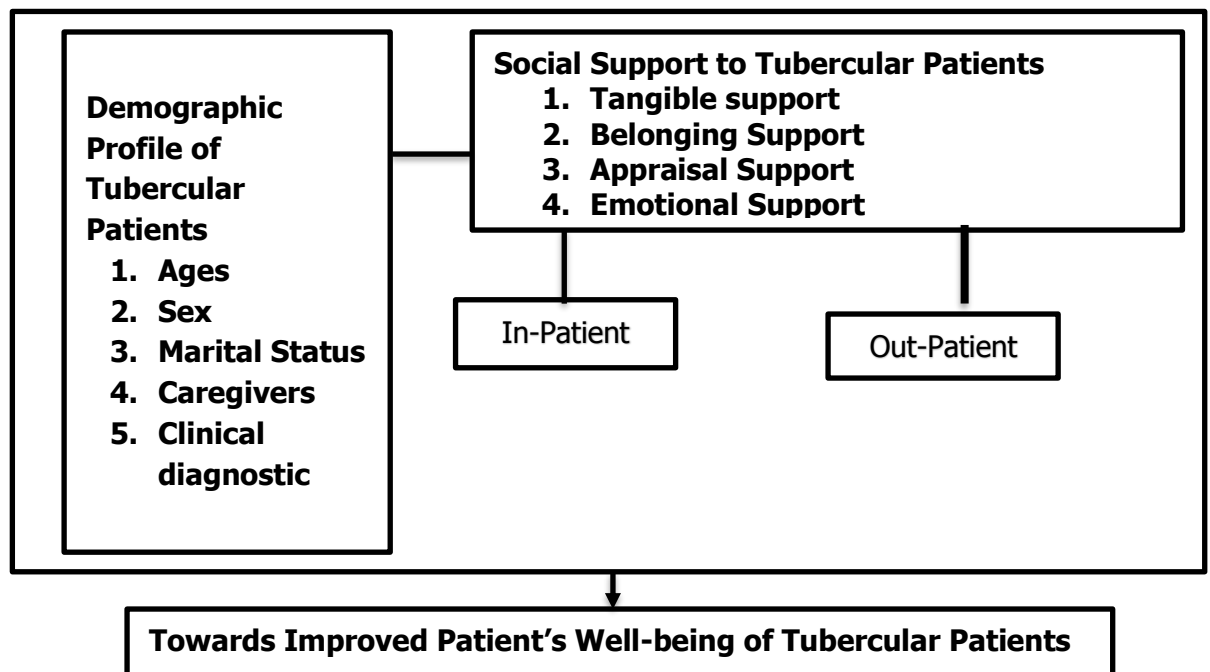


Figure 2. Research Paradigm

This study was conducted among inpatient and outpatient tubercular patients. The demographic profile of the participants were considered in assessing the social support and interpersonal relationship in nursing care of tubercular patients. Social support to tubercular patients, included: 1) Tangible Support, 2) Belonging Support, 3) Appraisal Support and 4) Emotional Support. Significant different between two variables were evaluated among tubercular inpatient and outpatients to improve their well-being.

METHODOLOGY

In this study, descriptive method was used to assess the social support in nursing care among tubercular patients in Central Java, Indonesia which provided evidence towards improved patient's well-being.. Cross sectional analysis was used to analyse data from a population of TB patients at a specific point in time (Wood & Haber, 2014). This study involved total enumeration of inpatients and out-patient with tuberculosis who are being treated at Dr. Ario Wirawan Pulmonary Hospital in Salatiga City, Central Java Indonesia. Purposive sampling considered tubercular patients in good physical condition and able to communicate especially in completing survey questionnaires. Moreover, research study involved adult respondents (>18 years old) who are able to make decision as well as able to make objective comprehension in accomplishing the questionnaire.

The Questionnaire was used as primary research tool to identify presence of social support that might be related to psychological status of tubercular patients. To assess social support, the researcher adopted the 40-item social support questionnaire developed by Cohen et al (as cited in Fetzer Institute, 2015). The study adopted a validated research tool, hence

pilot-testing was no longer conducted. According to Cohen (as cited in Fetzer, 2015), author of the Social Support Questionnaire, the internal reliability of the questionnaire has an impressive Cronbach alpha of 0.87. Statistical Treatment of Data are Weighted mean and Mann-Whitney U.

RESULT

a. The demographic profile of tubercular patients

Data analysis reveals that majority of the respondents were between the ages of 41 – 50 years old, of which 40% are inpatients and 45% are outpatients. According to the TB Report by the World Health Organization in 2016 (WHO, 2017), incidence of tuberculosis is usually evident to people who are > 14 years old because of the physical condition that had been decreasing in older period such as immune system. Besides that, the majority of the tubercular patients are male with 70% for the inpatients and 55% for outpatients.

Based on the categories of marital status, majority of the tubercular patients were married with 75% for the inpatients and 90% for the outpatients. Frequency and percentage distribution of single patients are very minimal. In the case of tuberculosis, most of the respondents present new cases of tuberculosis for both inpatients (30%) and outpatients (35%). This implies that most of the tubercular patients who came for initial consultation in the hospital are diagnosed as first time case of tuberculosis. On the other hand, incidence of tuberculosis relapse among tubercular inpatients and outpatients are also increasing. Meanwhile, cases of multi-drug resistant tuberculosis are on the rise with about 20%. Tuberculosis re-treatment is a patient who endures tuberculosis treatment and become healed from the disease, but the acid-fast bacilli get detected positive on the next sputum analysis, hence readmitted for treatment.

b. Social Support between Tubercular Inpatients and Outpatients

The table 1 presents the summary of social support in type of tangible support by tubercular patient. The overall mean 2.14 with interpretation probably true by tubercular inpatient and overall mean 2.12 with interpretation probably true by tubercular outpatient, are indicated that both participants were receiving high tangible support from their caregivers.

Table 1. Summary of Values Showing the Mean and Verbal Interpretation of Self-Assessed Social Support among the Respondents in Terms of Tangible Support

No	Social Support	Inpatient		Outpatient	
		Mean	Verbal Interpretation	Mean	Verbal Interpretation
2	If I needed help fixing an appliance, there is someone who would help me	2.45	Definitely True	2.35	Definitely True
9*	If I needed a ride very early in the morning, I would have a hard time finding someone to take me.	1.55	Probably False	1.90	Probably False
14*	If I were sick and needed someone to take me to the doctor, I would have trouble finding someone.	2.30	Definitely False	2.35	Definitely False
16	If I needed a place to stay for a week I could easily find someone who would put me up.	2.25	Probably true	2.15	Probably true
18	If I were sick, I could easily find someone to help me with my daily chores.	2.30	Definitely True	2.45	Definitely True
23	If I needed an emergency loan, there is someone (friend, relative, or acquaintance) I could get it from	2.20	Probably true	2.40	Definitely True
29*	If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house	1.85	Probably False	1.90	Probably False
33	If I was stranded from home, there is someone I could call who would come and get me.	2.35	Definitely True	1.85	Probably true
35*	It would be difficult to find someone who would lend me their transportation for a few hours.	1.95	Probably False	1.80	Probably False
39*	If I needed some help in moving to a new house I would have a hard time finding someone to help me	2.25	Probably False	2.10	Probably False
	Overall mean	2.14	Probably True/ probably False	2.12	Probably True/ probably False

Legend:

Positively stated items/*negative stated items

Level	Adjectival Description	Interpretation
2.26 – 3.00	Definitely True/ *Definitely false	Very High Support
1.51 – 2.25	Probably True/*Probably False	High Support
0.76 – 1.50	Probably False/ *Probably True	Moderate Support
0 – 0.75	Definitely False/*Definitely True	Low Support

Tangible support is practical help from caregivers when practical assistance is needed because of limited capacity on care. Family members including wife, sister or brother usually provide money for incidental expenses, household goods, tools, transportation, child care, assistance with cooking, cleaning, shopping, and repairs (Cohen as cited in Petterson and Bredow, 2014). This financial resolves practical problems and gives time to the patient to take rest.

Table 2 presents the overall mean and verbal interpretation of belonging support of tubercular patients.

Table 2. Summary of Values Showing the Mean and Verbal Interpretation of Self-Assessed Social Support among the Respondents In Terms of Belonging Support

No	Social Support	Inpatient		Outpatient	
		Mean	Verbal Interpretation	Mean	Verbal Interpretation
5	When I feel lonely, there are several people I can talk to.	2.40	Definitely True	2.55	Definitely True
7	I often meet or talk with family or friends	2.60	Definitely False	2.50	Definitely False
10*	I feel like I'm not always included by my circle of friends	2.25	Probably False	2.00	Probably False
12	There are several different people I enjoy spending time with.	2.70	Definitely True	2.35	Definitely True
15*	If I wanted to go on a trip for a day, I would have a hard time finding someone to go with me.	1.80	Probably False	1.80	Probably False
21	If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.	2.45	Definitely True	2.20	Probably true
25*	Most people I know do not enjoy the same things that I do.	1.90	Probably False	2.00	Probably False
27*	I don't often get invited to do things with others.	2.40	Definitely False	2.00	Probably False
31	If I wanted to have lunch with someone, I could easily find someone to join me.	2.65	Definitely True	2.70	Definitely True
34*	No one I know would throw a birthday party for me.	2.80	Definitely False	2.75	Definitely False
	Overall mean	2.39	Definitely True/Definitely False	2.28	Definitely True/Definitely False

Legend:

Positively stated items/*Negatively stated items

Level	Adjectival Description	Interpretation
2.26 – 3.00	Definitely True/ *Definitely false	Very High Support
1.51 – 2.25	Probably True/*Probably False	High Support
0.76 – 1.50	Probably False/ *Probably True	Moderate Support
0 – 0.75	Definitely False/*Definitely True	Low Support

With an overall mean of 2.39, verbally interpreted as definitely true/ definitely false (inpatients) and overall mean of 2.28, verbally interpreted as definitely true/ definitely false (outpatients), it confirms that tubercular patients receive very high of belonging support from their caregivers. The belonging support develop with social interaction between tubercular patients and people surrounding them. In their interaction, patients feel that their involvement are important and meaningful for other peoples.

Table 3 summarizes the overall mean and verbal interpretation of appraisal support of tubercular patients.

Table 3. Summary of Values Showing the Mean and Verbal Interpretation of Self-Assessed Social Support among the Respondents in Terms of Appraisal Support

No	Social Support	Inpatient		Outpatient	
		Mean	Verbal Interpretation	Mean	Verbal Interpretation
1	There are several people that I trust to help solve my problems	2.30	Definitely True	2.10	Probably true
6*	There is no one that I feel comfortable to talking about intimate personal problems.	1.50	Probably True	1.75	Probably False
11*	There really is no one who can give me an objective view of how I'm handling my problems.	2.05	Probably False	2.15	Probably False
17*	I feel that there is no one I can share my most private worries and fears with.	2.05	Probably False	2.05	Probably False
19	There is someone I can turn to for advice about handling problems with my family.	2.50	Definitely True	2.45	Definitely True
22	When I need suggestions on how to deal with a personal problem, I know someone I can turn to.	2.35	Definitely True	2.30	Definitely True
26	There is someone I could turn to for advice about making career plans or changing my job.	2.50	Definitely True	2.65	Definitely True

30*	There really is no one I can trust to give me good financial advice	2.15	Probably False	2.20	Probably False
36*	If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.	1.95	Probably False	2.30	Definitely False
38	There is at least one person I know whose advice I really trust.	2.45	Definitely True	2.65	Definitely True
	Overall mean	2.18	Probably true/ Probably False	2.26	Definitely True/ Definitely False

Legend:

Positively stated items/*Negatively stated items

Level	Adjectival Description	Interpretation
2.26 – 3.00	Definitely True/ *Definitely false	Very High Support
1.51 – 2.25	Probably True/*Probably False	High Support
0.76 – 1.50	Probably False/ *Probably True	Moderate Support
0 – 0.75	Definitely False/*Definitely True	Low Support

With an overall mean of 2.18, verbally interpreted as probably true/ probably false (inpatients) it confirms that tubercular patients receive high appraisal support, while with overall mean of 2.26, verbally interpreted as definitely true/ definitely false (outpatients), it confirms that tubercular patients receive very high of appraisal support from their caregivers. Based on the findings above, there is one interesting point that tubercular inpatient and tubercular outpatient having a different reaction. In the table above, at the point about “sharing their personal intimate problems”, participants (tubercular inpatient and outpatient), present the lowest rather than others items in aspect of appraisal support which score 1.50 means “probably true” for tubercular inpatient and 1.75 means “probably false” for tubercular outpatient. The different experience between two categories participants influence by their feelings during treatment.

Table 4. Summary of Values Showing the Mean and Verbal Interpretation of Self-Assessed Social Support among the Respondents in Terms of Emotional Support

No	Social Support	Inpatient		Outpatient	
		Mean	Verbal Interpretation	Mean	Verbal Interpretation
3*	Most of my friends are more interesting than I am.	1.75	Probably False	1.70	Probably False
4	There is someone who takes pride in my accomplishments.	2.40	Definitely True	2.50	Definitely True
8	Most people I know think highly of me.	2.30	Definitely True	2.15	Probably true
13*	I think that my friends feel that I'm not very good at helping them solve their problems.	1.85	Probably False	1.75	Probably False
20	I am as good at doing things as most other people are.	2.40	Definitely True	2.40	Definitely True
24	In general, people do not have much confidence in me.	1.95	Probably true	1.90	Probably true
28	Most of my friends are more successful at making changes in their lives than I am.	1.90	Probably true	1.80	Probably true
32	I am more satisfied with my life than most people are with theirs	2.35	Definitely True	1.95	Probably true
37	I am closer to my friends than most other people are to theirs	2.00	Probably true	2.10	Probably true
40*	I have a hard time keeping pace with my friends.	2.10	Probably False	2.15	Probably False
	Overall mean	2.10	Probably true/ Probably False	2.04	Probably true/ Probably False

Legend:

Positively stated items/*Negatively stated items

Level	Adjectival Description	Interpretation
2.26 – 3.00	Definitely True/ *Definitely false	Very High Support
1.51 – 2.25	Probably True/*Probably False	High Support
0.76 – 1.50	Probably False/ *Probably True	Moderate Support
0 – 0.75	Definitely False/*Definitely True	Low Support

Table 4, summarizes the overall mean and verbal interpretation of emotional support of tubercular patients. With an overall mean of 2.10, verbally interpreted as Probably true/ probably false (inpatients) it confirms that tubercular patients receive high emotional support, while with overall mean of 2.04, verbally interpreted as probably true/ probably false (outpatients), it confirms that tubercular patients receive high of emotional support from their caregivers. Emotional support refers to intimacy attachment through presence of one or more persons who can listen sympathetically when an individual is having problems and can provide

indications of caring and acceptance (Cohen, as cited in Peterson, 2014). Emotional support form by discussion of feelings, expression of concerns/worries; indicate sympathy, approval, caring, acceptance of person. This support has a purpose to alter threat appraisal of life events, enhances self-esteem, reduces anxiety/ depression, motivates coping.

Table 5. Summary of Values Showing the Significant Difference in Self-Assessed Social Support between Inpatient and Outpatient Tubercular Respondents

Mann Whitney U Result	P-Value	Decision
180	0.588	Accept Ho

Legend:

- > α 0.05 No Significant Difference
- < α 0.05 Significant Difference

The computed Mann Whitney U Test is 180 with a p-value of 0.588. Since the p-value is greater than the α (0.05), the null hypothesis is accepted. This means that there is no significant difference in the self-assessed social support among selected inpatient and outpatient tubercular respondents.

DISCUSSION

There are so much factors that interact with one another that influence psychological condition of tubercular patients thus impact the outcome of tuberculosis treatment including sex, age, socio- economic, and marital status. Mostly, tubercular patients is male with range of ages around 41-50 years old. In Development countries, incidental of tuberculosis among male associated to patient’s lifestyle in which more males are exposed to unhealthy practices, such as smoking and drinking alcohol (Soh et al, 2017). Smoking is a serious factor for patients with tuberculosis because it can irritate the lung and decrease the pulmonary function for gas exchange. One study depicted that tuberculosis is not only higher in elderly but also among men (Soh et al, 2017).

Based on ages, mostly tubercular patients are productive to work. Meanwhile, participants in this age group are responsible to support their family needs. However, according to the interview with 3 participants, they were losing their job because of their health problem despite their lower economic status. According to National Guidelines of Tuberculosis 2011 (as cited in Karuniawati et al, 2015), tuberculosis cases in Indonesia are inclined to financial loss that become another burden for the patients and families. Based on economic problem, in this study, tubercular patients showed two different reactions. First, tubercular patients are motivated to be healed and they can work as usual. Second, they have psychological distress because of their problem and they thought to stop the treatment because they do not want to be of burden to their families. The same cases were found in other developing countries like Ethiopia with low economic status associated with psychological distress (Tola et al, 2015). In Indonesia, treatment of tuberculosis is subsidized by the government especially for patients with MDR-TB. Moreover, all Indonesian people have

a right to take public insurance to help their health funding. Therefore, the roles of nurses are important to assess the possibilities of health insurance for tubercular patients and also provide clear information about the treatment of the patients and guide the family to give motivation to the patients in order to prevent patients from relapsing or re-treatment.

Another factors that impact for prevalence of TB in Indonesia is social support. According to Tola et al (2015), in Ethiopia, one of the factors of physiological condition of tubercular patients is marital status. In tubercular cases, physiological distress is higher among unmarried patients than those married tubercular patients. Marriage is related to the feelings of attachment and belonging, which are thought to affect mental health. These caregivers support the patients by means of supplemental nursing care during hospitalization. Incidentally, the most dominant and principal supplemental care providers from the family are the wives of the tubercular patients. While families (relatives, brothers, sisters, cousins or brother-in-law or sister-in-law) make the most dominant support system for tubercular outpatients besides their partner (husband or wife) and their parents. According to Indonesian Health Department (2014), the roles of caregiver in tuberculosis rehabilitation is important. In Indonesia, families and communities become partners of health care workers in supporting patient to complete their treatment (Kementerian Kesehatan Republik Indonesia Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan, 2014).

Indonesian government in management of tuberculosis refers to World Health Organization program (STOP TB Strategy). One of the program is community and tubercular patient empowerment (Kementerian Kesehatan Republik Indonesia, 2017). This program means that communities and families as a partners of health care professional to care the patient with tuberculosis. Community role as caregiver has been implemented as drugs supervisor. In this case, family or other relatives will provide attention and support to tubercular patients by taking medicines regularly. Tuberculosis partners include people or community that have got concern, desire, ability and commitment to support tuberculosis control strategy and program based on specialty. In cases of MDR-TB, patients have to get their medicines from Primary Health Care Center (*Puskesmas*) near their residence and assisted by their families to observe adherence to medications. In addition, health care professionals and The Indonesian Government make a network for MDR-TB survivors as a motivator for other MDR TB Patients.

According to the result about patient's diagnostic, mostly tubercular patient dominated by new cases of tuberculosis, and some patients with Multi-drug resistant (TB-MDR), TB with HIV and TB with Diabetics. TB-MDR is a case where tuberculosis patient becomes resistant to one or more type of tuberculosis medication. This problem is actually an important concern on TB End Strategy in Indonesia, hence, tubercular patients get subjected to Xpert/MTB RIF (an automated diagnostic test that can identify *Mycobacterium tuberculosis* (MTB) DNA and resistance to rifampicin (RIF). In other hands, tuberculosis is a complications of disease related to decline of immune system of tubercular patients is caused by complications with other diseases such as diabetic mellitus, pleura effusion, lung cancer, and HIV. Tuberculosis looks higher in Indonesia because this infectious can happen to the people with immune system depression causes by HIV/AIDS.

Indonesia is the country with acceleration increasing of HIV epidemic than among other countries in Asia. Indonesian Health department (2016) estimating that around 190.000-

400.000 number of people with HIV/AIDS in Indonesia. Prevalence of new cases HIV is 2.8%. The complications of the disease make tuberculosis require longer time of treatment for tubercular patients with diabetes. Some of the tuberculosis medications have adverse reaction to diabetes drugs. The *Rifampicin* can reduce effectiveness of *Sulfonileurea* if taken at the same time. Therefore, the dose of tuberculosis medicine has to be increased. In other cases, *Ethambutol* has to be controlled accurately because it results to the *diabetic retinopathy*. Consumption of insulin becomes an alternative therapy for the tubercular patients with diabetes during tuberculosis treatment than oral diabetic medication (Departemen kesehatan Indonesia as cited in Karuniawati et al, 2015).

Social support for tubercular inpatients and outpatients based on support aspects.

a. Tangible Support

Family members including wife, sister or brother usually provide money for incidental expenses, household goods, tools, transportation, child care, assistance with cooking, cleaning, shopping, repairs. (Cohen as cited in Petterson and Bredow, 2014). This financial resolves practical problems and gives time to the patient to take rest. Tangible support is practical help from caregivers when practical assistance is needed because of limited capacity on care.

During data gathering process, researcher noted two cases in polyclinic where patient consult on their condition unaccompanied by family. According to the patients, their families are busy with their work, and patients do not want to become a burden to their families. Also, it is a problem for nurses and physicians getting limited information about patient's medical history during hospitalization or lack of understanding about information related to patient's rehabilitation process at home. Family presence is needed to be able to share adequate information about patient's exact condition in order to have better plan from hospital confinement to home rehabilitation. According to Masry (2014), lack of knowledge about TB for both patients and families has a correlation with sustained and managed treatment especially on administering medications.

b. Belonging Support

The belonging support develop with social interaction between tubercular patients and people surrounding them. In their interaction, patients feel that their involvement are important and meaningful for other peoples. The theoretical benefits of this support produce positive affect, allow release and recuperation from demands and provide positive distraction from rumination about problems (Cohen cited as by Petterson and Bredow, 2014). For tubercular patients, high risk for bacterial transmission is a reason to limit their social interaction (Karuniawati et al, 2015). However, this fact is in contrast with the findings of this study that tubercular patients feel belongingness with others. On tubercular patients' experience, there is someone who can talk and spend time together with them. It can be influenced by the culture of Indonesian people especially in Javanese culture where people having problems, the other families have the responsibility to take care of the patient or just pay visit when patients are home after hospitalization. The most important thing in this case

is preventing families and significant others from getting infected by their patients. Therefore, concern of tuberculosis prevention is a patient and family centered-care.

c. Appraisal Support

According Center for Disease Control and Prevention (as cited in Duffy, 2009), during hospitalization, there are some multiple treatments and medications, complex discharge needs and health insurance problems that cause burden to patients. Moreover, the condition of illness results to declined physical function and increased dependence to others. These factors, make them to sleepless and experience to stress (Topf & Thompson, as cited in Duffy, 2009). This experience may lead the patient to feel illness even more. According to Duffy (2009), illness refers to sense of wholeness formed by person because of change in physical, emotional, cultural, and social (family and role functions). In this case of tubercular inpatients, these feelings might be experienced by themselves, therefore patients feel moderate support in terms of sharing intimacy problem with others. Unlike tubercular outpatients, who are in process of rehabilitation are having more positive views to share their problem and receive advice positively from others. Thorough interview is needed to find more information about emotional of tubercular patients in future studies.

Appraisal support is also being felt by the patients by accepting advice/guidance on problem solving. For tubercular patients, problem solving means families can provide information on health resources and services or provide alternative information about resources and advices about effectiveness. The theoretical benefits of this support increase amount of useful information available to individual, help obtain needed services and lead to more effective coping (Cohen, as cited in Petterson and Bredow, 2014)

d. Emotional Support

The emotional support refers to empathy, caring, acceptance, concern, reassurance, and trust that provides opportunity for emotional venting. In tuberculosis cases, families show their attachment action by asking what the patients feel about their health condition, then report it to the nurses to get some advice or health information. Therefore, the presence of families during hospitalization assists the patient to do their basic needs and gives direct guidance. When tubercular patients talk about their health problem like getting transportation to the hospital, they find another alternative for health care services. Also if they are not satisfied with their previous treatment, it is important to enhance the positive support and environment surrounding the patient, maintain good health and address health care costs as well as promoting happier and healthier lives (Cohen, 2015). Cohen also asserted that social support and interpersonal touch buffer against interpersonal stress-induced susceptibility to infectious disease.

The assistance from families may include listening to the stressed person talk about troubles, expressing warmth and affection, offering advice or another way of looking at the problem, providing specific assistance such as looking after the children, or simply spending time with the stressed person. These interaction between family and patient can will give positive feeling of the tubercular patient especially to complete their treatment. Therefore, for the nurses, engagement of patient's family in the nursing care process is essential. Family

become an informal partner of nurse to help the patient to fast recovery from the disease (Borges et al, 2017).

In tubercular cases, the aspect of physical and physiological are affected and the results are profound. There is the reaction to the illness itself. Illness represents a fundamental threat to one's basic sense of wholeness. The illness comes if someone have an unhealthy physical condition. The illness form by people based on their view about their body (body image), what they have heard or read about others in similar situations, individual psychological significances, and societal/cultural points of view. Physiological changes can create feelings of discomfort, vulnerability, and dependence that generate loss of self-confidence and create uncertainty (Duffy, 2009). Therefore, the roles of parents, grandparent, spouse, worker, or friend are gives psychological impact to maintain psychological feelings of patient prevent them from the sense of wholeness. These because social and cultural support systems, including the direct support a TB patient receives from their family and friends as well as social norms that prescribe certain behaviours based on the TB patient's sex, age, and other categories/labels, have an implication to the outcomes of tuberculosis treatment (University research LLC, 2015). In Indonesia, the roles of community are included in the program to prevent tuberculosis. According to Health Department Ministry (2016), government has been developing *GERDUNAS- TB (Gerakan Terpadu Nasional Penanggulangan TB)* which is cross-institution movement including government in central and regional area to control tuberculosis based on partnership with hospital, private institution, researcher, non-government organization, other financial foundations and community.

Significant different between social support inpatient and outpatient

Social culture can influence respondents' experience of social support. As observed by the researcher, participants come from the same background which is *Javanese* culture. Culture of patient refers to shared beliefs, knowledge, feelings, and objects that have a motivational quality and leads people to categorize and assign meanings, expect certain behaviours, and act in particular ways (D'Andrade cite by Albert, 2014). Therefore, participants have the same feelings of social support that they receive from others.

Families and loved ones of the participants have essential roles in decision-making for their patient during hospitalization and rehabilitation. Close relatives, primarily spouses, assist the patient to find health care services, listen for their problem, and extend instrumental support including accommodation, transportation and financial. Interaction with others helps the patient maintain and complete their treatment (Horn et al 2015; Aydemir, 2015). Social support also provides effective coping mechanism to the patients and alleviates anxiety that may usually lead to mental health disorder because of the nature of treatment and the burden of infectious disease (Amiya, 2014)

Based on the results of the study, a health promotion program enhanced with information education and communication (IEC) materials were designed for tubercular patients and their family members. These materials are essential tools for nurses in providing health education pertaining to tuberculosis as well as to significant family members during rehabilitation of the patient. Infographics and brochures materials feature the following: etiology of the disease; signs and symptoms of the disease; treatment of tuberculosis; risk factors of relapsing tuberculosis; and management health care of tuberculosis by families.

Moreover, promotion through television maybe a good medium for health promotion since mass media network is widely accessible to the general public

Table 6
 Health Promotion Program and Information Education and Communication (IEC)
 Materials

Topic	Objectives	Strategy	Timelines	Evaluation
Family roles for tuberculosis rehabilitation	<ol style="list-style-type: none"> 1. Define signs and symptoms of tuberculosis 2. Identify preventive intervention for tuberculosis 3. Describe the treatment of tuberculosis 4. Recognize the risk factors of relapsing tuberculosis 5. Strengthen the family support for the tubercular patients 6. Explain social needs during patient rehabilitation 	<p>Make infographics and brochure about tuberculosis and family roles during rehabilitation process of tubercular patients.</p> <p>Discuss essential information with infographics in the meeting with tubercular patient and their families in the hospital or health Center.</p>	<p>1-2 days</p> <p>1-2 hours for every meeting</p>	<p>Pre-test and Post- test evaluation</p>

STOP TUBERCULOSIS FAMILY PLANNING SERVICES

WHO IS RISK?



Elderly



People with
 HIV



People with
 Diabetes

SIGNS AND SYMPTOMS



Cough with
 blood sputum



Chest pain



Fatigue



Sweat at night



Fever



Loss of weight



Loss of
 appetite

TUBERCULOSIS TREATMENT

- High nutrition (high protein, low sugar, avoid tobacco, alcohol, caffeine).
- Taking medicine (Rifampicin, Isoniazid, Ethambutol, Pyrazinamide, Streptomycin) within 6 months (Physician's order).

TB RELAPSE RISK FACTOR

- Incomplete treatment.
- Low immune system by complication of disease (HIV, DM, Lung cancer).
- Exposure with MDR-TB patients.

CARING TB PATIENT



LISTEN TO THE PATIENT PROBLEMS

Listen to their needs
 for health care services.

PRESENTING INSTRUMENTAL AID

- 1 Assist patient during rehabilitation and medical check-up every month.
- 2 Encourage patient to complete the treatment.

PREVENTING TB

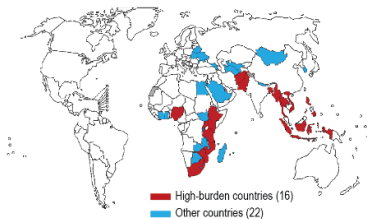
- 1 Use mask.
- 2 Ventilate the patient bedroom.
- 3 Encourage personal hygiene (cover with tissue when cough, hand hygiene).

References:
 Kementerian Kesehatan Republik Indonesia, 2014
 Pusat Data dan Informasi Kementerian Kesehatan RI, 2016

Figure 1. IEC Materials (Infographic)

STOP TUBERCULOSIS : FAMILY CARE PLAN

WHO (2015) reported that TB has high incidence rate in developed countries including some areas of Africa, Europe, and Asia. Some countries in Asia with notable incidence rates include India with 23%, Indonesia with 10%, and China with 10%. Yet, TB prevalence in 2015 was a global concern.



HOW CAN BE INFECTED OF TUBERCULOSIS BACTERIA?

Transmission of the microorganism can spread very fast through airborne. The respiratory secretions of a coughing by patient called droplet (droplet nuclei) can infect others in minutes when other people inhale the air with contamination of bacteria.

WHO ARE RISK TO BE INFECTED?

The rapid infection makes the disease easily gets transmitted to other people especially those with low immune system like people with HIV/ AIDS, people with diabetes, lung cancer, smoker, people with malnutrition. The elderly and infant become easily infected because their immune system is lower in age categories.



Elderly



People with Diabetes



People with HIV

WHAT ARE THE SIGNS AND SYMPTOMS OF TUBERCULAR PATIENTS?

- Patient might be noticed in an assessment such as coughing with blood for more than 2 weeks, fatigue, body malaise, shortness of breath and significant weight loss.



Cough with blood sputum



Loss of weight



Fatigue

- Some patients might develop effusion or accumulation of fluid in the lung space that manifests after chest x-ray diagnosis. Therefore patient will show fever, pleuritic chest pain, and shortness of breath.



Fever



Sweat at night



Chest pain

TUBERCULOSIS TREATMENT

- High nutritional consumption (high protein, low sugar and salt) and avoid spicy food. Avoid alcohol, caffeine, smoking.
- Taking medicine regularly (Rifampicin, Isoniazid, Ethambutol, Pyrazinamide, Streptomycin) within 6 months or based on Physician's order.

TB-RELAPS FACTORS

- Tubercular patients who has recovered could be relapsed in some conditions:
- Incomplete treatment.
 - Low immune system by complication of disease (HIV, DM, Lung Cancer).
 - Exposure with MDR-TB patients (patients who are resistant to one or more type of tuberculosis medication drugs).

Figure 2 IEC Materials (Brochure) pages 1

CARING TB PATIENT : FAMILY ROLES

01 LISTEN TO PATIENT'S PROBLEMS

- Listen to their needs for health care services.
- Do not isolate the patients.
- Give clear explanation to the patient if the patient has to be temporarily isolated to prevent the spread of infection.

02 PRESENTING INSTRUMENTAL AID

- Assist patient during rehabilitation and medical check-up every month.
- Encourage patient to complete the treatment to avoid TB-relapse or resistance to tuberculosis medication drugs.

03 SIDE EFFECT OF MEDICATION DRUGS

The patient might having experience vomiting, red urine, loss of appetite, or mental disorder such as hallucination (for patient with MDR-TB).

- Encourage patient to eat soft food. Avoid spicy salty, sour or oily food. Also, avoid fruit with alcohol like durian.
- Encourage patient to eat regularly with a small portion of food to prevent nausea.
- Suggest to the patient to drink minimum 4 liters of water or depending on needs.

- Observe agitated behaviour of patients such as confusion, talking alone, getting angry without any trigger, and anxiety (especially for MDR-TB patient).

04 PREVENTING TB IN FAMILY

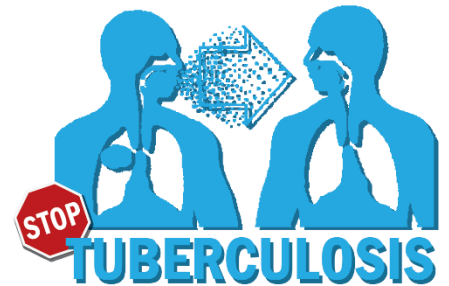
- Use mask.
- Ventilate the room especially the bedroom of tubercular patient.
- Encourage personal hygiene (cover with tissue when coughing).
- Present proper container for patients to throw their secretions when coughing. Clean it regularly with disinfectant.
- Consider medical check-up for family members who interact with tubercular patient.

RECOVER FROM TUBERCULOSIS

Tuberculosis caused by mycobacterium tuberculosis, could be survived if:

- The patient take tubercular drugs regularly based on physician's order .
- Medical check-up every month in the hospital or health center.

References:
 World Health Organization, 2015.
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FAMILY CARE PLAN

Figure 3 IEC Materials (Brochure) Pages 2

CONCLUSION

1. Majority of tubercular inpatients and outpatients at Dr. Ario Wirawan Pulmonary hospital were male aged 41 – 50 years old, married and cared by their partner (wife) and families and are classified new cases of tuberculosis.
2. Social support from families, friends and significant others are extended to tubercular inpatients and outpatients.
3. There is no significant difference in the self-assessed social support among selected inpatient and outpatient tubercular respondents.

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STRESS AND PSYCHOLOGICAL WELL-BEING AMONG NURSES IN SABAH: PRELIMINARY STUDY

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ABSTRACT

This study examines the impact of stress among nurses. Factors that contribute to stress include inadequate work or high workload, relationship between nurses and other medical staff, leadership style and support given to patient. The objectives were to identify the main Source of Stress among nurses, level of Psychological Well-being and examine the relationship between Source of Stress and Psychological Well-being. A quantitative method was used in the gathering and analyzing the data using SPSS version 23. The questionnaire such as Nursing Stress Scales (NSS) and Ryff's Psychological Well-Being Scales (RPWBS) are distributed to 33 nurses in Sabah. The main Sources of Stress is Conflict with Other Nurses with total mean 14.18. The level of Psychological Well-being with highest scorer in Personal Growth with total mean 62.66 which the lowest is Autonomy with a total mean of 49.78. In addition, there is relationship between Source of Stress and Psychological Well-being. The study is important in order to help the nurses and Hospital Management to take care and maintain the Psychological Well-being of nurses.

Keywords: Stress, Psychological Well-being, Nurses

INTRODUCTION

Stress or Stressor when it reaches to a certain level, will improve the performance and psychological well-being of an individual and it is healthy and essential for individuals who experience life's challenges. Excessive stress can give a helpful impression to be lost and harmful.

Previous studies concluded that causes of stress can be categorized into:

Work Environment: This study focuses on specific stress situations for nurses, which affect their work performance. Nurse stress can be identified and that can cause stress by physical, psychological and social environments. Working situations such as incorrect ventilation, lighting and temperature that are not suitable for stressors associated with work potential.

Interpersonal Relationships: Work has relationships with potential stressors. The cause of stress is conflict with colleagues and lack of support from nurses. The lack of social support from colleagues and top officials can also bring less job satisfaction to the Head of Nurses which will contribute to the onset of stress.

Organizational Factors: Studies show that the nursing itself, organization and management features have influenced the nurse's stress management experience at work. Stress caused by nursing work situations, can be physically, psychologically and socially.

Role Features: Enthusiasm and role of conflict as feature of work stress role. Abundance can be defined as less clearly about the target of the worker and the tasks, while the role of the conflict as a conflict between the professional roles.

Individual Features: Researchers also conclude that work stress arises from social affairs that are partly determined by the work organization and the interaction between organizational factors and the feature of individual work.

Behavioral Problems: Stress affects the behavioral problems of nurses and their ability to accomplish tasks. Where, they make unsatisfactory decisions, lack of focus, easy taking, decreased motivation and anxiety can affect work performance that will result in mistakes in the workplace.

Mental Problems: The stress of work and its consequences on nurse behavior can provide mental disorders such as anxiety, depression, insomnia and uncertain feelings.

Based on the above issues, this present study aimed to answer the following the research questions:

1. What is the main Source of Stress among nurses?
2. What is the level of Psychological Well-being among nurses?
3. Is there relationship between Source of Stress and Psychological Well-being among nurses?

LITERATURE REVIEW

Stress-related work is caused by the way organizational management and weak systems work. According to Leka et al. (2003), work stress can be caused by poor institutional management, poor working environment or working situation and lack of support from working teams. Research findings (Stoica & Buicu 2010) have shown that the type of work pressure is where individuals face unskilled work demands with their capabilities and abilities. Pressure also occurs where there are too many restrictions and no chance or little opportunity in making choices and having low external support. Sharma et al. (2008), states that the primary sources of nurse stress include, workload, working hours, working environment and interpersonal relationships. Cheraghi et al. (2013), found that 64.55% of medication errors were performed by nurses. The main cause of the incident is due to the number of patients who have been treated by nurses who cause increased workload. In Shanghai, China, for example, nurses have high burnout levels, and stress-related work.

METHODOLOGY

Sampling and Population: Convenient Sampling is used where a population of 33 subjects in Queen Elizabeth II Hospital have been chosen because of their suitability, accessibility and proximity to the researcher.

Instruments: The Nursing Stress Scale (NSS) consists of 34 items, 4-point Likert scale was designed to measure the frequency and major sources of stress experienced by nurses at hospital units (Gray-Toft & Anderson, 1981) with responses (1 = never to 4 = very frequently) which: (1) Death and dying (2) Conflict with physician (3) Inadequate preparation (4) Lack of support (5) Conflict with other nurses (6) Work load and (7) Uncertainty concerning treatment. The Ryff's Psychological Well-Being Scales (RPWBS) consists of 84 items, six dimensions of 14 questions respectively. 6-point Likert scale was designed to measure Psychological Well-being of nurses (Ryff, 1989) with responses were (1 = strong disagreement to 6 = strong agreement). The 6 dimensions: (1) Autonomy (2) Environmental Mastery (3) Personal Growth (4) Purpose in Life (5) Positive Relation with Others and (6) Self-Acceptance.

RESULTS

Table 1: The Demographic of Respondents

Variable	Frequency (n=33)	Percentage (%)
Gender		
Female	28	84.85
Male	5	15.15
Status		
Single	11	33.33
Married	21	63.64
Divorced	1	3.03
Age		
21-25 years	11	33.33
26-30 years	14	42.43
31-35 years	6	18.18
35-40 years	2	6.06
Years of Service		
Less than one year	6	18.18
1 – 5 years	18	54.55
6 – 10 years	6	18.18
More than 10 years	3	9.09
Highest Education		
Diploma	28	84.85
Post basic	4	12.12
Others (Degree)	1	3.03
Department/Ward/Unit		
Emergency & Trauma	9	27.27
Dept.Male Medical	24	72.73

Salary		
RM2001- 3000	26	78.8
RM3001- 4000	7	21.2

The Table 1 shows the female nurses are the highest respondents with 28 (84.85%) compare to male only 5 (15.15%).

Table 2: The Level of Sources of Stress

	Mean	Std. Deviation
Conflict with Other Nurses	14.18	4.36
Death and Dying	13.03	3.38
Work Load	12.81	3.28
Conflict with Physician	12.75	3.52
Inadequate Preparation	9.15	2.42
Uncertainty Concerning Treatment	8.63	2.77
Lack of Support	5.75	1.82

The result of the level of Source of Stress in Table 2 shows that the Conflict with Other Nurses is high with mean 14.18; Std 4.36 and Lack of Support is low with mean 5.75; std 1.82 which affect the Psychological Well-being of nurses.

Table 3: The Level of Psychological Well-being

	Mean	Std. Deviation
Personal Growth	62.66	10.54
Purpose in Life	60.48	10.09
Positive Relations with Others	58.12	9.25
Self-Acceptance	56.75	8.59
Environmental Mastery	56.54	9.43
Autonomy	49.78	6.92

The result of the level of Psychological Well-being in Table 3 shows that Personal Growth is higher with mean 62.66; Std 10.54 and Autonomy is low with mean 49.78; std 6.92.

Personal Growth: Higher Scorer has a feeling of continued development; sees self-growing and expanding is open to new experiences; has sense of realizing his or her potential; sees important in self and behavior overtime, is changing in ways that reflect more self-knowledge and effectiveness with total mean 62.66. **Lower Scorer** has a sense of personal stagnation; lack sense of important or expansion overtime, feels bored and uninterested with life, feels unable to develop new attitude or behaviors. **Autonomy: Higher Scorer** is self-determining and independent, able to resist social pressure to think and act in certain ways, regulates behaviors from within, and evaluates self by personal standards. **Lower Scorer** is concern about the expectation and evaluations of others; relies on judgments of others make important decisions; conforms to social pressures to think and act in certain ways with total mean 49.78.

Table 4: Relationship Between Sources of Stress and Psychological Well-being

		Sources of Stress	Psychological Well-being
Sources of Stress	Pearson Correlation	1	-.478**
	Sig. (2-tailed)		.005
	N	33	33
Psychological Well-being	Pearson Correlation	-.478**	1
	Sig. (2-tailed)	.005	
	N	33	33

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation between the two variables ($r = -.478$), suggesting negative relationship between Sources of Stress and Psychological Well-being.

DISCUSSIONS

The Sources of Stress, Conflict with other Nurses is the main Source of Stress among nurses which affects their Psychological Well-being. Based on the study, level of Psychological Well-being is significant and supported by the study. Mehta & Singh (2015), supported the findings that lack of proper communication amongst nurses was identified as sources of stress in 68% of nurses while 64% nurses reported stress was caused due to when they are facing problems with peers and nurses. The findings also consistent with Ryff (1989), in her study that Personal Growth is continuing capabilities and abilities of individual. This happen, when Personal Growth is high in individuals, they tend to increase their forces and talents to solve problems.

CONCLUSIONS

The Sources of Stress among nurses Conflict with Nurses scored higher. Meanwhile, Psychological Well-being has scored higher in Personal Growth. While, Sources of Stress scored higher in Psychological Well-being scored lower or vice versa correlated negatively. For the Conflict with Nurses, the researcher suggested that Hospital Management should have the Nursing Leadership Training, Communication Skills. A complete Ward Management with enough knowledge and skills to address challenging management roles.

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THE STRESS REDUCTION AND RELAXATION EFFECT OF TOUCHING -WRAPPING A HAND OF AN EXPERIMENT PARTICIPANT BY BOTH HANDS OF A PRACTITIONER

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ABSTRACT

Hospital staffs may take communication while holding the patient's hand. In this study, the effects of touching to a hand were examined. The two outcome indices were provided in this study; one was physiological index and the other was subjective index. The subjective index was about the shoulder tenderness measured by the Visual Analog Scale. The physiological index was about the cerebral blood flow rate and the heart rate of the prefrontal cortex. There were two experiment groups; one was an intervention group to which touching to a hand was administered, and a control group to which touching was not administered. As a result, the cerebral blood flow in the right prefrontal cortex showed a statistically significant increase in the control group. In the experimental group, the cerebral blood flow rate in the prefrontal cortex tended to decrease both in the right and the left hemisphere. The heart rate and shoulder tenderness were found to be lower in statistically significant degree in the experimental group, and such significance was not observed with the control group. From these results, it was suggested that touching to a hand possibly reduced stress and enhanced relaxation. (200words max)

Keyword: Touching, Stress, Relaxation

INTRODUCTION

There are various preceding studies about the effect of touching in terms of methods and their effects. Tokura [1] reported the effect of touching on various parts of the body. Tokura reported that touching to a hand was found to be effective to encourage and communicate empathy to the experiment participants. Holding a hand was reported to successfully reduce anxiety of patients who had strong anxiety [2]. Medical staffs often witness the families of patients holding their hands [3]. However, there are not many preceding studies which examined the effect of touching on the functions of autonomic nerve system while a hand was held.

Therefore, in this research, effect of touching on autonomic functions and reduction of stress was examined. There are some preceding studies in this area using somatic and physiological index. The somatic index included muscle tone and the physiological index, such as the activities of frontal lobe and heart rate. For example, Shahidi et al [4] examined the relationship between psychosocial stress and muscle tone around the neck. Shahidi et al[4]

reported that regardless of the posture, muscle tone of upper trapezius selectively increased among experiment participants who suffered from stress.

Matsuura et al [5] examined the relationship between trapezius muscle stiffness and psychosocial stress. Matsuura et al [5] used pressure stimulus upon upper fibers of trapezius and right splenius capitis muscle as well as psychological questionnaire. They found that the psychosocial conditions of the participants were possibly related to the severity of stiff shoulder.

Furthermore, it was reported that the functions of prefrontal area directly affect the sympathetic nerve system at the level of brain stem and spine [6]. It was also reported that function of parasympathetic nerve system was enhanced based upon the fact that brain activities of left and right prefrontal area and heart rate decreased [7].

Suga et al[8] examined the relaxation effect of facial care analyzing the brain activities of prefrontal area using near infrared spectroscopy. Suga et al[8] reported that relaxation was achieved, as it was indicated by the suppression of brain activities of left and right prefrontal area.

In this study, the effect of touching on a hand was measured in terms of stress reduction and enhancement of relaxation, measuring the blood flow in the prefrontal area and subjective feeling of pain on the upper fibers of trapezius after pressure stress as outcome indices.

In this study, the effect of touching was examined. As objective indices, brain activities of prefrontal area and heart rate were measured. As psychological indices, the pain level of the upper fibers of trapezius was measured using VAS: Visual Analog Scale, as it was reported in the preceding study that trapezius was susceptible to psychosocial stress.

METHODOLOGY

This study was a basic research therefore, healthy hospital staffs were selected as experiment participants. A written document was shown to the experiment participants as well as verbally explained that it was voluntary to participate in the experiment and even if they chose not to participate, they would not be negatively affected. It was also explained to the experiment participants that the pressure would be slowly and gradually introduced to the upper fibers of the trapezius. After listening to the explanation and agreed to participate the experiment, those who agreed to volunteer were selected. The scheme of this study was approved by the ethic committee of the hospital where the experiment participants belonged (Approval date : August 2016).

28 (12 males, 16 females, average age 30.0 ± 3.77 yeas) hospital staffs agreed to participate in the experiment. This participants was divided into experimental group and control group by randomized controlled trial (RCT). The intervention group had 14 participants, and the control group had 14 participants.

3 practitioners conducted the intervention. 2 of them did touching on a hand of experiment participants. They were one male and one female, so that the therapist of the same sex of the experiment participant held his/her hand. One therapist gave pressure pain on the trapezius.

The therapists who conducted the intervention

The therapists who touched the hands of experiment participants were the same sex of the experiment participants. One male therapist was a physical therapist with two years of experience and one female therapist was an occupational therapist with one year of experience.

The therapist who gave pressure pain was a male occupational therapist with 14 years of experience, and a specialist of evaluating range of motion of joints, muscles, muscles tone, and pain.

The experiment room: Speech therapy office of approximately 20m² was used for the experiment. The room temperature was kept at 26 ~27°C. Nobody either came in or out of the room during the experiment. The period of experiment: September 2016

Touching method

Touching was done to a right hand of an experiment participant. The pressure pain was also applied to the right shoulder. The therapist who administered touching sat at right front side of the experiment participant and a right palm of the experiment participant was wrapped by the both hands of the therapist who administered touching (Figure 1).

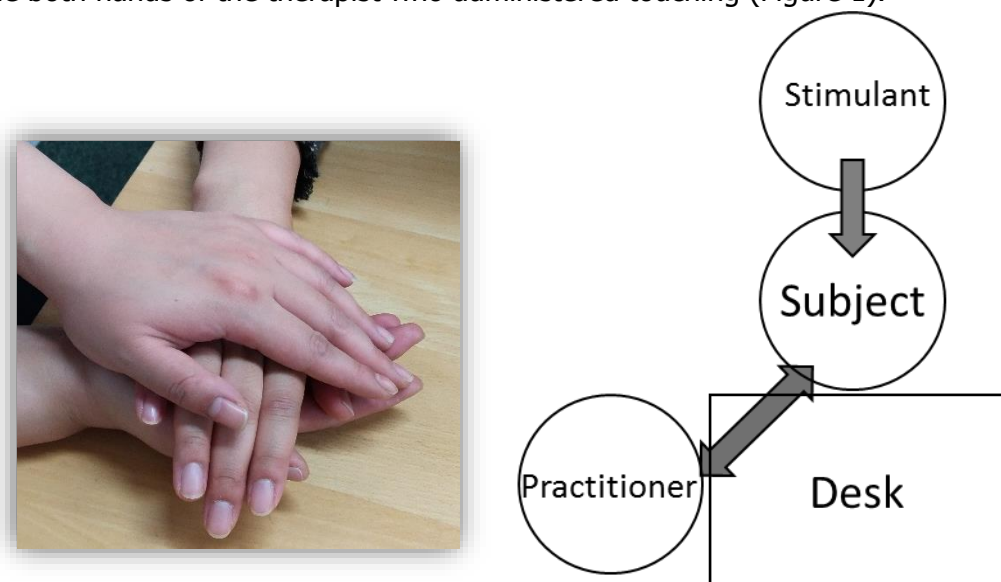


Figure 1. Position of hands of a practitioner and an experiment participant during touching experiment

Participants' seating position

The experiment participants stayed seated during the experiment. The practitioners verbally instructed the experiment participants to stay relaxed.

Outcome Measures

The outcome indices included the brain activities of the prefrontal area, heart rate, VAS and an open-ended question. The brain activities and heart rate were measured by Hitachi HOT-1000, which can acquire 100 data in 10 seconds. It was also possible to obtain data of right and left prefrontal area separately.

VAS was conducted as follows. A paper was prepared with a 10cm horizontal line. On the left hand side of the line, it was written: "Not painful", and on the right side of the line, it was written: "Painful". The therapist put pressure pain on the induration of the upper fibers of right trapezius. Then the experiment participants were guided to mark on a VAS paper. To examine the effect of touching, the pressure pain was administered for two times and VAS was filled out before and after the intervention. An open-ended question was asked at the end of the entire experiment. The unit of VAS was cm.

Figure 2 describes a protocol of the experiment. The control group was provided because of the following 2 reasons. First, since the experiment participants were all seated quietly during the experiment, it could reduce the brain activities of the prefrontal area and heart rate. Second, the pressure pain could be a comfortable stimulus depending on the subjective feelings of the experiment participants, and if they feel comfortable with this stimulus, their parasympathetic rather than sympathetic nerve system would be stimulated.

This experiment was to examine the effect of touching to a hand. Therefore, the control group was included in this experiment.

The brain activities and heart rate were expected to change due to the administration of pressure pain. Therefore, the measurement of the brain activities was done before the intervention. Then, after the intervention, the resting period of 90 seconds was provided. Then the measurement was taken again.

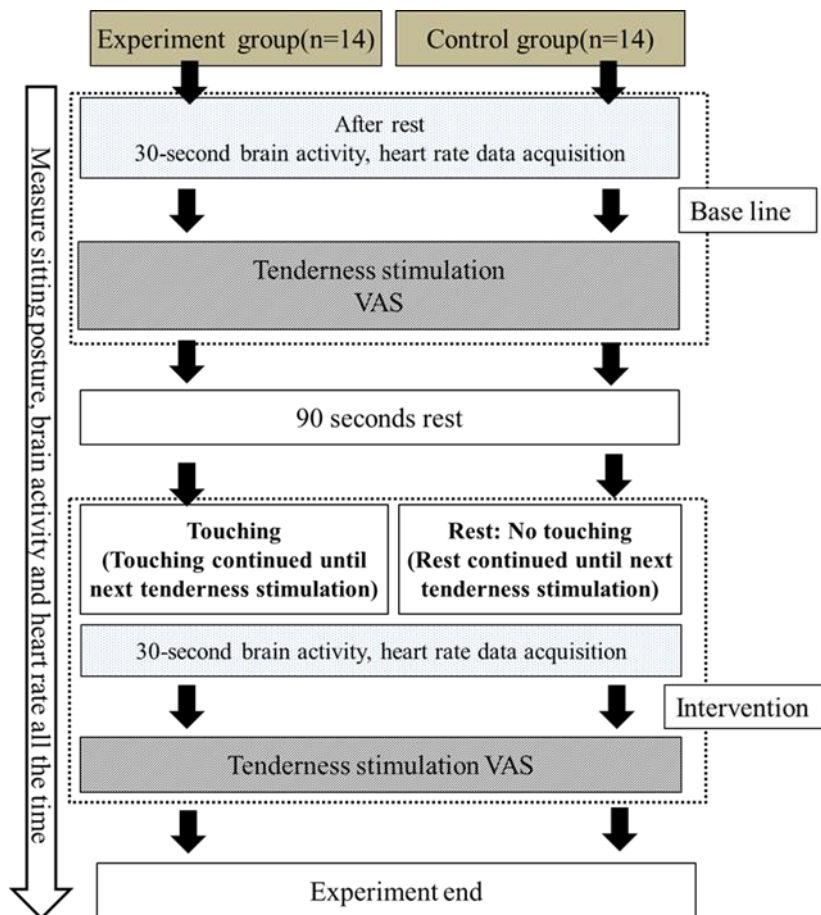


Figure 2. Protocol of experiment

Data Analysis

As a pre-experiment, the appropriate length of touching was examined. Touching duration over 30 seconds were rated "too long". Therefore, the experiment participants rested for 90 seconds, and then the brain activities and heart rate were measured by HOT-1000 continuously until the next tenderness stimulation. Touching was done in an intervention group for 20 seconds. The other experiment participants rested for 20 seconds in a control group where touching was not administered. Then the brain activities and heart rate were taken for 30 seconds in both the intervention and the control group, once either touching or resting was completed. The representative value was the average of 300 data taken in those 30 seconds.

The data of the right and left brain activities, heart rate, and VAS were analyzed by 2 factor ANOVA and the main effect and the interaction were determined. If there were the main effect and the interaction, multiple comparison by Holm method was conducted.

The statistical analysis was performed with HAD[9], with a significance level set at $p < .05$.

RESULT

Brain activity

Compared to the control group, the brain activities decreased on both right and left side of the prefrontal area of the experiment participants of the intervention group. Before the intervention, the right brain was more active than the left in the intervention group and the left brain was more active than the right in the control group (Figure.3).

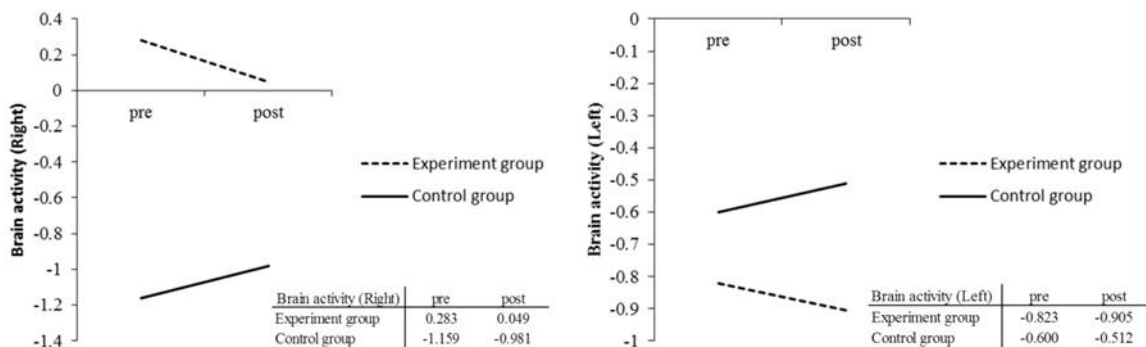


Figure.3 Left and right Brain activity results

Therefore, ANOVA was not conducted. Instead, paired t-test was conducted to examine the difference of change of pre and post intervention of the intervention group and the control group. As the result, the brain activity of the right prefrontal area of the control group increased at the statistically significant level ($p < .05$). Overall, the brain activity of both right and left prefrontal area of the intervention group lowered compared to that of the control group. However, no statistical significance was observed (Table.1) .

Table.1 Comparison of brain activity pre and post the intervention (Mm.mm)

Experiment group					Control group				
Left brain	Mean	SD	t value	p-value	Left brain	Mean	SD	t value	p-value
Base line	-0.82	2.24	0.57	.59	Base line	-0.60	1.54	0.86	.42
Intervention	-0.90	2.41			Intervention	-0.52	1.32		
Right brain	Mean	SD	t value	p-value	Right brain	Mean	SD	t value	p-value
Base line	0.27	0.30	1.26	.25	Base line	-1.14	1.82	4.57	.00 *
Intervention	0.04	0.66			Intervention	-0.97	1.75		

* p < .05

Heart rate

As the result of 2 factor ANOVA, the main effect ($p < .01$) and the interaction ($p < .01$) was obtained. Therefore, multiple comparison by Holm method was conducted. As the result, pre and post of the intervention group showed the statistical significance ($p < .01$) and the post of the control group showed the statistical significance ($p < .01$)(Table. 2).

Table .2 Heart rate (bpm), Result of two factor analysis of variance.

Mean and standard deviation of each cell				Factor of the effect			
Variable name		Mean	SD	Variable name	Partial η^2	F value	p-value
Experiment group	Base line	76.92	7.44	Touching conditions	0.08	1.10	.31
	Intervention	69.56	7.55	Base line-Intervention	0.56	15.01	.00 **
Control group	Base line	76.58	4.79	Interaction	0.60	17.76	.00 **
	Intervention	76.89	5.60				

** p < .01, * p < .05

Multiple comparisons	Holm method			
	Difference	Effect size	t value	p 值
Experiment group (Base line) - Control group (Base line)	0.34	0.10	0.10	ns
Experimental group (Intervention) - Control group (Intervention)	-7.33	-1.56	-2.12	.04 *
Experimental group (Base line) - Experimental group (Intervention)	7.36	1.52	5.72	.00 **
Control group (Base line) - Control group (Intervention)	-0.31	-0.04	-0.24	ns

** p < .01, * p < .05

VAS

As the result of 2 factor ANOVA, the statistical significance of the interaction was recognized ($p < .05$). The multiple comparison was conducted by Holm method. As the result, pre and post of the intervention group showed the statistical significance ($p < .01$) and the post of the control group showed the statistical significance ($p < .01$)(Table. 3).

Table.3 VAS(cm), Result of two factor ANOVA.

Mean and standard deviation of each cell				Factor of the effect			
Variable name		Mean	SD	Variable name	Partial η^2	F value	p-value
Experiment group	Base line	52.70	13.88	Touching conditions	0.13	2.18	.16
	Intervention	33.80	20.98	Base line-Intervention	0.15	2.59	.13
Control group	Base line	52.86	20.77	Interaction	0.26	5.23	.04 *
	Intervention	56.14	17.37				* $p < .05$

Multiple comparisons	Holm method			
	Difference	Effect size	t value	p-value
Experiment group (Base line) - Control group (Base line)	-0.16	-0.02	-0.02	ns
Experimental group (Intervention) - Control group (Intervention)	-22.34	-1.69	-2.47	.02 *
Experimental group (Base line) - Experimental group (Intervention)	18.90	1.37	3.03	.01 **
Control group (Base line) - Control group (Intervention)	-3.29	-0.17	-0.44	ns

** $p < .01$, * $p < .05$

The result of an Open-ended question

The following answers were obtained by an open-ended question (Table.4); "stiffness of the shoulder became less severe", "my hand became warmer", "I felt safe", "I felt sleepy", "the pressure felt good" in the intervention group. "The pressure felt good", "I felt nothing particular".

Table.4 The result of an open-ended question

Experiment group	Frequency	Probability(%)
Stiffness of the shoulder became less severe.	7	33.3
My hand became warmer.	5	23.8
I felt safe.	4	19.0
I felt sleepy	3	14.3
The pressure felt good.	2	9.5
Control group	Frequency	Probability(%)
The pressure felt good.	4	57.1
I felt nothing particular.	3	42.9

DISCUSSION

Various effects of touching were reported in the preceding researches. This research focused on touching to a hand. The outcome indices included the brain activities, heart rate, and subjective feelings against pressure pain, to explore the effect of touching to a hand.

Physiological index

As the result of the experiment, although there was not statistical significance, the brain activities became lower after touching on a hand and the difference was larger in the intervention group, compared to that of the control group. The brain activities of right prefrontal area of the control group increased with the statistical significance. Sakatani [10] reported that if an experiment participant's right brain hemisphere was more active than that of the left, s/he was more susceptible to the activation of parasympathetic nerve system which was a stress index, and the suppression of parasympathetic activities.

Among the experiment group where the participants experienced touching, the brain activities of both right and left prefrontal area became lower. It could be said that touching to a hand possibly contributed to the suppression of the brain activities of the right cerebral, and

possibly suppressed stress. In addition to the suppression to the prefrontal area, heart rate was lowered with statistical significance by touching to a hand. Ito et al [11] reported that shaking hands reduced stress examining the heart rate and the perspiration. Suda et al [7] reported that the brain activities of right and left brain and the heart rate decreased and there was a correlation with increase of parasympathetic nerve system activities. There was a report about the effect of facial care which suppressed the prefrontal area and possibly enhanced relaxation [8]. As was reported in these preceding studies, touching could possibly enhance relaxation. In this experiment, as well, the possibility was indicated that touching to a hand would contribute to enhance relaxation.

However, in this study, there was already a difference of brain activities among the experiment participants, at the base line before the intervention. The activities of the right brain hemisphere were more predominant in the intervention group, and those of the left brain hemisphere were more predominant in the control group. In the future studies, it is necessary to examine the dominance of brain activity in the two different brain hemispheres among the experiment participants.

Furthermore, the prefrontal area not only indicates the activities of sympathetic/parasympathetic nerve system, but it has more complicated functions. Therefore, it is necessary not to make any generalization about the activities of prefrontal area. It is necessary to add more scale and psychological test to precisely examine the effect of touching in the future.

Subjective indicator (VAS and free response)

This experiment used VAS to examine the subjective feeling against the pressure pain on the upper fibers of trapezius. As the result, the pain level reported by VAS significantly decreased with touching to a hand. Touching to a hand possibly contributed to decrease subjective feeling of pain.

The result of an open-ended question indicated that touching to a hand enhanced the subjective feeling of safety and healing. The previous research in gynecology reported that the labor anxiety was decreased by a husband holding a hand of his wife while she was delivering a baby [12].

In this research, too, it could be derived that touching to a hand not only enhanced relaxation and reduced stress, but also reduced anxiety. In the future, it is necessary to use the scales which examine anxiety or feeling of safety to study the effect of touching. However, the answers of the open-ended question are primarily as a reference and do not necessarily support the result of the research in a positive way. It is necessary to analyze the result from different view point. Furthermore, In this research, a therapist applied pressure pain on the upper fibers of the trapezius. There could be slight difference of the pressure since it was conducted by a human being. Therefore, in the future, it is necessary to use electromyogram to measure the pressure to obtain even more objective result. The result of electromyogram can be compared with the result of psychological scales.

As the result, it was indicated that touching to a hand of an experiment participant possibly reduced stress and pain, and increase relaxation. Goldstein et al [13] reported that the pain was reduced by holding hands, as it enhanced resonance of brain and supportive relationship between a therapist and an experiment participant. It can be said that holding a hand in this

experiment also created somewhat supportive relationship between the therapist and the experiment participant due to the supportive attitude of the therapist.

CONCLUSION

Although there were several issues and limitations about this experiment, touching to a hand possibly reduced the brain activities of right and left prefrontal lobe and heart rate in physiological perspective. Concerning the subjective perspective, the pain of the pressure stimulus on the upper fibers of right trapezius was possibly decreased by touching to a hand. It suggested the possibility that touching by other people could enhance relaxation and reduce stress.

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A STUDY PROTOCOL: EFFECTS OF BEHAVIORAL CHANGE GUIDANCE ON COGNITIVE FUNCTIONS AND HEALTH BEHAVIORS THROUGH NORDIC WALKING ACTIVITIES

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ABSTRACT

Dementia prevention is one of the important and critical steps in achieving a successful and sustainable community in Japan. The participants attending a community-based walking program for five months showed improvement in the language portion of the 5-cog test, compared to others who did not. Lately, The Nordic Walking program has been getting attention for its effectiveness on promoting blood circulation and improving upper body mobility by aerobic exercises from walking activities. The purpose of this study is to find the effectiveness on health guidance for cognitive functions as well as health behaviors in daily life through the Nordic Walking program. The estimated participants are 50 individuals between the age of 65 and 85 who are confirmed by the validity and reliability of the 5-cog. Primary outcomes are the 5-cog scores and IADLs. Secondary outcomes are Health QoL, self-reported changes of the daily social activities, and the number of days attending the Nordic Walking programs. The other outcomes include age, gender, years of education, level of education, and etc. The study results are expected to achieve the hypotheses and to help NPOs with practical implementation strategies for their social support contribution in integrated comprehensive care systems.

Keyword: self-awareness, self-management, behavioral change, 5-cognition tests, Nordic Walking

INTRODUCTION

Japan is the highest aging rate in the world (OECD). In accordance with this fact, the number of dementia sufferers have continued to grow, which is one of the biggest issues in the Japanese super aging era (Okamura, Ishii, Ishii, & Eboshida, 2013). The previous research showed that vascular risk factors increase the risk for memory decline and dementia, and health advice, physical activity, active lifestyles and healthy diets are related to a lower risk of dementia (Ngandu et al., 2015). In terms of health promotion, local communities always provides opportunities to join various clubs for the culture, sports, and volunteers, etc. However, the public research about social participation needs of older adults reported about 50% of the persons living in community dwellings have never participated in the local activities nor intended to in the future (The Institute of Gerontology, University of Tokyo, 2014). This population could be at high risk to develop dementia diseases. On this point, community facilitators could serve a key role to solve potential aging related problems to any other chronic health issues by providing opportunities for social activities. Improving health literacy in a population requires to help people, such as community facilitators, to develop confidence to act on the knowledge and the ability to work with and support others will be achieved through

more personal forms of communication, and through community-based educational outreach (Nutbeam, 2000). Nowadays, the ministry of health labour and welfare created a voluntary system to prepare places the older adults belong to, and fostered the community facilitators to run the places in the community. Therefore, if the community facilitators are provided necessary resources and skills, such as a guidance techniques based on the theories and evidence, it could be a beneficial approach to make the activities more attractive and participatory to increase health behaviors among older adults.

LITERATURE REVIEW

The risk of developing dementia symptoms would become 20% lower by changing unhealthy lifestyle habits through health education at the early stage for aging (Rovio et al., 2005). Thus far, targeting the earlier stage of aging for health promotion is an effective way for dementia prevention. The survey reported that the top three activities among over 55 years older adults are related to basic health maintenance, such as nutrient intake balance, regular medical check-ups, and sufficient rest and sleep (Japan foundation for aging and health, 2019). A little bit less than 50% are about a walk/sports and hobby, but participation in community activities are relatively low (19.4%). Schwarzer (1992, 2008) introduced the Health Action Process Approach (HAPA) describing the social cognitive determinants of physical activity. The HAPA model is useful as an appropriate framework for identifying social cognitive determinants of PA among middle-aged and older adults (Caudroit, Stephan, Scanff, 2011). Renner et al. (2007) found that intentions were positively and strongly predicted by self-efficacy, followed by risk perception and outcome expectancies among middle-aged/older adults, whereas self-efficacy itself was sufficient for intention formation among the younger group in their study of PA prediction based on the HAPA model. The results showed that older adults' self-efficacy could be formed by risk perception and outcome expectancies, and creates positive and strong intentions to PA. In other words, giving them self-awareness about current health conditions, such as cognitive functions, physical functions, and daily activities, through a simplified health check-up could be beneficial to promote their intentions to engage in PA. Another study showed that self-efficacy contributes to older adults' regular exercises (MaAuley et al., 1995) and well-being (McAuley, Blissmer, Katula, & Duncan, 2000).

Two NPOs promoting PA as dementia prevention activities involved with this study. One NPO conducts the Five Cognitive Test (5-Cog), and the other provides free lessons of the Nordic Walking to increase the community activity participants, to achieve their mutual goal, which activates a community. The 5-Cog is a simplified group assessment tool for cognitive functions with sufficient reliability and validity for detecting MCI in community-dwelling older adults (Sugiyama et al., 2015). As for the Nordic Walking activities the existing study showed its effectiveness on the elderlies' physical power, blood circulation promotion and the upper body mobility improvement by aerobic exercises from the walking activities (e.g., Minami, Yorimoto, Bunki, & Fujita, 2010). Another study reported that participants attending a community-based walking program for five months showed improvement on the language portion of the 5-Cog test, compared to those that did not (Maki, Y., et al., 2012). In this way, promoting the health behaviors including social interactions could prevent or delay the dementia symptoms. Therefore, the current study expects a community facilitator provides the 5-Cog as an opportunity to check-up on the cognitive functions while another community facilitator introduces the 5-Cog participants to their activities based on the 5-Cog results. The purpose of this study is to find the effectiveness on health guidance for cognitive functions provided by the community facilitators as well as health behaviors in daily life through the Nordic Walking program.

METHODOLOGY

The study will be a randomized control trial design with two arms and paired matched design. If the sample size does not meet the designated number, the covariate adaptive randomization would be chosen to minimization by assessing the imbalance of sample size among several covariates (Suresh, 2011). The 5-cog leaflets on the public places will recruit approximately 50 participants between the age of 65 and 85, who live around the Mitaka city area in Tokyo, Japan. The 5-cog events will be administered by a researcher and collaborator at least three times between June and August in 2019. The estimated participants will be 50 individuals. The sample will be eligible if their age is between 65 and 85, the age range confirmed by the validity and reliability of the 5-cog. Participants will be excluded if they are in need of their doctor's medications or they do not complete the 5-cog.

This study was approved with [019-024] by the Research Ethics committee for the Academic Research Ethical Review Committee at Waseda University on June 10th, 2019.

RESULT

Primary outcomes will be the 5-cog scores and IADLs. Secondary outcomes: Self-Efficacy, Health QoL, self-reported changes of the daily social activities, and the number of days to attend the Nordic Walking programs. Others will be age, gender, years of education, level of education as well as BMI and Muscle Quality measured by TANITA scales. For each group, the study will determine descriptive statistics of the sample's sociodemographic at baseline, and the outcome measures at all time points. Univariate analysis of covariance will be used to investigate differences between the groups at baseline and at all time points. The paired t-tests will be conducted to evaluate changes on the cognitive functions on the 5-cog. The Analysis of Variances assesses differences in the secondary outcomes between times and two groups. If any statistically significant differences are detected, the correlation analysis will be conducted between the significant factors. The analysis of covariance will be also conducted to assess the main and interaction effects of sociodemographic variables on continuous dependent variables, secondary outcomes, at all time points. All statistical tests were 2-tailed, and a 5% significance level was maintained.

In results, the 5-Cog scores for the intervention group expected to be higher than the control group. The scores of Health QoL and self-reported daily social interactions for the intervention group shows higher scores than the control group. The number of attending the Nordic Walking programs are associated with the scores of Health QoL and self-reported daily social activities outcome.

DISCUSSION

The purpose of this study is to find the effectiveness on health guidance for cognitive functions provided by the community facilitators as well as health behaviors in daily life through the Nordic Walking program. The 5-Cog scores are expected with the participants to understand their current health conditions about which cognitive functions they need to strengthen, and to be a trigger of participation in the community event, such as the Nordic Walking program, and then enhance health behavior in the daily life. The comprehensive community care system was introduced to support older adults in the community instead of hosting them in the nursing facilities due to the high and rapid growth of aging in Japan. Therefore, this study will also examine a trial model for the community facilitators of health promotion to the older adults at high risk for developing dementia disease. As for the potential limitation, it would suffer from small sample size affected by dropouts at the beginning or during the intervention.

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UNCOVERING KOREAN ADOLESCENTS' SUICIDE WITH TEXT MINING AND MACHINE LEARNING

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ABSTRACT

Suicide was the leading cause of death among teens and young people in South Korea. Even though the number of Korean adolescent suicides is less than that of adult suicides, the harmful effects on parents, siblings, friends, acquaintances, schools, and communities are enormous. The Korean department of education has introduced various suicide prevention programs. As a part of the school-based suicide prevention program, suicide-related data has been collected. With this huge size of Korean adolescent suicide-related data, computational methods - machine learning and text mining - have been applied to extract of the characteristics of Korean adolescents suicide. In this paper, we introduce some of the analytical results obtained from the computational analysis of teachers' written reports. Unlike numerical data that abstracts the details of the suicide's story, it provides the rich and essential aspects of the adolescent suicides. At the end of the paper, we will discuss how our research will be extended to more practical application.

Keyword: Korean adolescent suicide, machine learning, text mining, crisis text line

INTRODUCTION

It is notoriously known that Korea's suicide rate is the highest among OECD (Organization for Economic Co-operation and Development) countries (28.7 per 100,000 people in 2013). According to data from Korea Statistic Information Service in 2016 (KOSIS, 2016), there were 13,992 people in the country who took their own lives a year. At an average, 36 individuals die by suicide every day. The Korean government is actively pursuing policies to prevent suicide and most research and policies focus on adults and the elderly.

In contrast, adolescent suicide in social issues and policies has been received relatively less attention. Adolescent suicide is an extreme socio-pathological problem with a significantly negative impact on not only individuals but also their parents, siblings, and peers (Hong et al., 2017). The adolescent suicide rate in Korea (ages 15 to 19) stood at 8.2 as of 2013, the eighth highest among OECD countries. Contrary to the worldwide decline in youth suicides,

the rate of youth suicides in Korea, which decreased gradually from 10.7 per 100,000 in 2009 to 6.5 in 2015, has been on the rise again to 7.9 in 2016 (KOSIS, 15-19-year-old youth suicide rate, 2017).

Various factors of influence such as personal, family, and social factors play a role in the cause of youth suicide. Adolescent suicide is triggered by everyday stress, the period from the suicide thought to the suicide attempt is very short, and the suicide is heavily influenced by media such as the Internet and social network service (SNS) (Cheng et al., 2017). Thus, adolescent suicide is different from adult suicide, which is often deliberately caused by chronic mental illness or economic difficulties. In particular, social media has emerged as a new factor in adolescent suicide as youth's communication and information exchange has increased recently, affecting online activities and media attitudes to suicidal behaviors directly or indirectly.

While most existing studies on adolescent suicide rely on quantitative or qualitative methods through surveys or interviews, the response rate for traditional surveys is very low, especially among younger generations. Information on suicide victims or those involved in suicide is usually obtained through psychological autopsy or non-structural counseling, is limited to the existing statistical methods. Attempts to generalize by applying statistical methods can significantly help policy-making and improving, but statistical methods always require a high level of abstraction, which inevitably results in a large amount of information being collapsed into numerical variables.

Computational methods such as text mining and machine learning provide a new opportunity to analyze and understand suicidal behaviors recorded in various forms – survey, interview, and SNS messages in a more coherent way (Langhinrichsen-Rohling, 2017; Berry, 2003; Blei et al., 2003)). In general, text mining is a process that extracts high-quality information from text data. It is a technology that analyzes the results from a large set of structured or unstructured data beyond the capabilities of collecting, storing, managing, and analyzing data with existing database management tools (Wang et al., 2013). With this technology, the suicidal message propagation and user relationship on social network can also be analyzed (Colombo et al., 2016). Machine learning is a field of artificial intelligence, referring to the field in which computers develop algorithms and technologies that allow them to learn. Recently, machine learning method is introduced to suicidology - classifying suicide notes or medical records into suicides and non-suicides (Pestian et al., 2010).

In this paper, we introduce our recent research efforts to understand Korean adolescent suicide and suicide attempt. These efforts are based on the computational analysis of Korean adolescent suicide and suicide attempt using text mining and machine learning methods. The characteristics of Korean suicides and suicide attempters will be investigated.

A Conceptual Framework for Korean Adolescent Suicide

Adolescent suicide is influenced by multi-dimensional factors ranged from the individual level to the social level. These factors are included such as depression, impulsivity, the experience of child abuse, previous suicide attempts, family characteristics, the regional characteristics, and social and cultural factors including peer groups and social media. However, it is

impossible for our study to cover all of these factors. Instead, our study will focus on school and SNS in which activities of Korean adolescent can take place and can be observed. After student suicide emerged as a severe social problem, the school-based suicide prevention programs have been introduced by the Korean government, in particular, the department of education. The program requires the inter-organizational cooperation among school, regional societies (counseling center, hospital, social welfare center) and government for effective prevention measures (Kwon, 2014). The school-based suicide prevention programs include suicides prevention program and life-respecting program for students, a suicide prevention program for teachers, and the screening test for students with mental health problems. The screening test is designed to identify the warning signs of at-risk student and is allowed for teachers to intervene in a potential crisis of the student actively. Also, a teacher's report on student's suicide or suicide attempt is introduced. Thus, it is required for a teacher of the student officially report the case to the government, once a student suicide or suicide attempt happens. All of these data are obtained to construct a database. So, the database is composed of structured responses (e.g., Likert scores) and unstructured responses (e.g., text description).

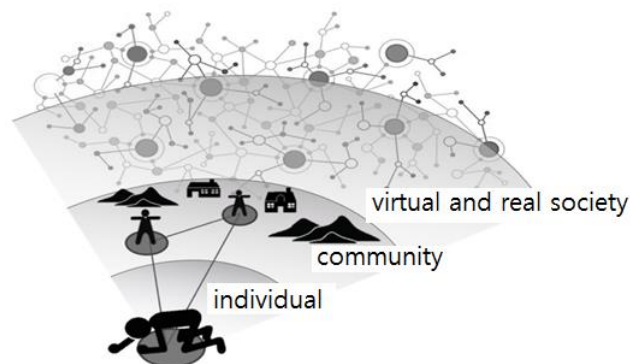


Figure 1. Conceptual framework of our research. Adolescent suicide can be understood in the different levels – individual, community, and society levels.

Text Mining and Machine Learning in Suicidology

Text mining and machine learning methods have been recently introduced in suicide research (Khan et al. 2010). For example, the text mining method was used to predict suicide attempts among US-Iraq war veterans using the electronic health records of 250,000 veterans and showed superior performance in terms of specificity and a false positive rate (Thompson et al., 2014). In another instance, the risk of suicide in patients in the UK who died by suicide in the period 2013-2016 was assessed by analyzing the notes of the patients (Fernandes, 2018). The text mining techniques were also used and to analyze emotional distress in Chinese microblogging (WEIBO) users and to detect depression in the users of a micro-blog social network by constructing sentiment-related vocabulary and imposing linguistic rules for sentence analysis. Google and Facebook's suicide prevention program uses AI technology to search all posted articles, videos and conversation to alert users or alert friends if they detect suicidal impulses or suspicious behavior.

the document's topic. By estimating the distribution of words of a topic, one can predict which topics the document address. The underlying assumption of LDA is sometimes described as the exchangeability of words, meaning that when words are in the pocket and words are pulled out

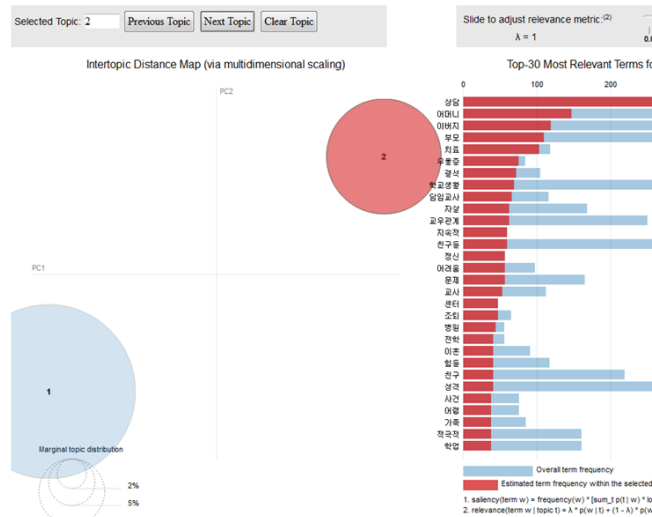


Figure 4. Latent Dirichlet Allocation. About 30 % of cases were assigned to the topic that is associated with a suicidal crisis. The words such as 'medical treatment,' 'depression,' 'suicide,' 'counseling center,' and 'divorce' are often found in these case reports. In the figure, the small circle is associated with the student suicide cases that described the suicide crisis, whereas the big circle is associated with the cases that did not described the suicide crisis.

Figure 4 shows the results of the LDA on a particular set of the student suicide case report. The reports are grouped into two topics. There are several ways to determine the number of topics that can be classified, but in this study, researchers manually assign them into two groups. About 70% of the reports were classified as topic 1 and about 30% of the documents as subject 2. The words that compose of Topic 1 were documents that did not mention any warning signs, but frequently appear followings: 'parent,' 'sex,' 'friend,' 'mother,' 'relationship' and 'wishes.' That is, a homeroom teacher did not perceive any clue of a student's crisis. On the other hand, topic 2 includes crisis words such as 'counseling', 'treatment', 'depression', 'absence,' and 'divorce.'

Word2vec: Representing words in a vector space

As literally implicated, word2vec is an algorithm that changes words into vectors. This model is used for learning vector representations of words, called 'word embeddings' in which words or phrases from the vocabulary are mapped to vectors of real numbers. At the initial stage of the process, words in the model are represented in one-hot-vector space – a space with one dimension per word. The one-hot-vector is transformed into a continuous vector space with a much lower dimension. In its learning process, the model tries to maximize the conditional log-likelihood where c indicates a central word and o indicates its surrounding words. So, the

model predicts the current word from a window of surrounding context words. Also, the vector calculus – addition, subtraction, dot product – is allowed to establish a specific relationship between vectors. Similarities between words can be measured by cosine similarity between two non-zero vectors of the inner product. The cosine of 0 degree is 1, and it is less than 1 for any other angle in the interval $[0, 1/2 \pi]$.

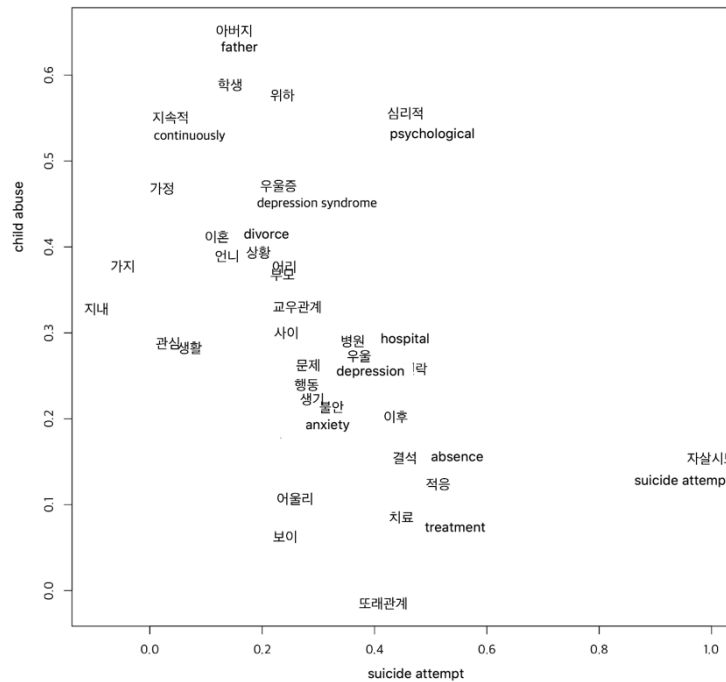


Figure 5. Word2Vec representation. The words associated with 'child abuse' and 'suicide attempt' were plotted. The word 'father' is scored the highest in the 'child abuse' axis. The words '(medical) treatment' and 'absence' are highly scored in the 'suicide attempt' axis

Figure 5 presents the similar words to the 'child abuse' and 'suicide attempt'. Along these two words, many problematic words such as 'divorce', 'anxiety,' 'depression,' 'hospital,' 'treatment,' etc., are nearby placed. The word 'child abuse' co-occurred with the word 'father'.

DISCUSSION

The issue of adolescent suicide prevention is essential not only for Korea but also for the other counties. Many countries implement intervention and prevention policies of suicide for adolescents, and research is being carried out to identify the factors that affect suicide. Suicide, as known, is influenced by many factors ranged from psychological to social causes. The identification of characteristics of Korean adolescent suicides should be based on the data related to suicide, and thus, the effective prevention policies should be established on the data. To this end, new technologies – machine learning and text mining that incorporates traditional methods such as medical and social information with non-structured but rich textual information are introduced. Even though it is the very early stage of the technology introduction, adolescent suicide-related information such as school-based mental health screening test, suicide case report, suicide attempt case report, mental health profession's

outreach program, and SNS (so-called 'Crisis Text Line') counseling data is accumulated in order to construct a big database.

For practical applications, machine learning and text mining technologies can be used to identify a suicide high risk group on SNS or SNS-based counseling system. The early detection of warning signs and immediate intervention are critical. However, in the case of adolescents, there are many hurdles in practical applications. First, the psychiatric screening evaluation is limited in the early detection of warning signs since adolescent suicide is highly variable and impulsive. Secondly, even though prevention measures are in place to intervene suicide attempts, it is essentially required to build up a system that can carefully detect possible suicidal risks since more than 70 % of adolescent suicides died in the first fatal suicide attempt. Third, it is important to get early mental health services because more than 90% of adolescent suicides are diagnosed with psychiatric disorders. However, the accessibility to a medical institution is very poor not only because of negative perceptions of the psychiatry or prejudice of mental health, but also because of practical reasons to go to school. Fourth, the youth mental health service infrastructure is very poor in terms of its quantity and quality, and even adolescents who ask for help cannot get a proper service.

The machine learning system for online counseling (Crisis Text Line), which we currently interest in, is expected to provide a new approach to the prevention of adolescent suicide. The massive textual counseling records have been accumulated for the last two years, and are ready to develop new applications for detecting adolescent at-risk in real-time. Furthermore, it is possible to establish an effective text-based counseling model that employs coping strategies according to the client's characteristics, and that trains a novice counselor if he/she is relatively unskilled or lack of a field experience.

With social problem-solving approach, the adolescent suicide problem is tackled in the way to integrate engineering methods into existing humanities or psychopathological approach. This will extend the computing engineering that usually works in virtual space as well as the social science that is typically theory-oriented to the real world.

CONCLUSION

It is hoped that our research will not be limited in the theoretical realm, but be extended to more practical applications to help directly adolescents at-risk. In this regard, our research is a pioneering attempt to bring the engineering into the suicidology. Our future study will focus on the integrative and elaborative research that fills the gap between psychiatry and engineering.

ACKNOWLEDGEMENT

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UNIVERSITI MALAYSIA SABAH UNDERGRADUATE NURSES PERCEPTION OF CHILD MARRIAGE

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ABSTRACT

Child marriage is a controversial subject in Malaysia and is of concern from a medical perspective as it is associated with obstetric risk such as higher foetal death and difficulty in childbirth and is not sanctioned as a positive evidence-based practice. However, despite contrary adverse evidence, within dogmatic communities in Malaysia, child marriage is deemed as a normative practice. Nurses often are confronted with child marriage issues in the community and are in a position to advocate against such practice. The objective of the study is to gauge the perception of Universiti Malaysia Sabah undergraduate nurses towards child marriage. This is a cross sectional survey involving 100 respondents randomly selected from a population of 156 diploma nursing students in Universiti Malaysia Sabah. The study instrument consists of items requiring Likert-like response ranging from strongly disagree to strongly agree regarding statements on the various issue on child marriage. Results indicate 72% (n=72) of respondents do not sanction child marriage, 8% (n= 8) supported the practice under certain circumstances and 22% (n=22) were neutral in their stance towards child marriage. Respondents who held mixed perception, expressed cultural- religious tenets justifying child-marriage practice in actuating circumstances. The vast majority of Universiti Malaysia Sabah`s undergraduate nursing students do not favour child marriage and a small fraction of respondents are ambivalent in their stance towards this practice.

Keyword: Undergraduate nursing students, perception, Child marriage

INTRODUCTION

In 2000, the Malaysian marriage registry census showed that child marriage affected 6,800 girls below the age of 15 in Malaysia. The true extend of child marriage in Malaysia may, however, be even higher as many couples who take part in religious or customary weddings do not register their unions. (Sharifah, 2017).

From a medical prospective, there is strong well-established evidence that child marriage is directly associated with numerous obstetric sequelae and complications such as high foetal mortality rate, preterm labour, difficulty in labour (Kawakita, Wilson, Grantz, et al, (2017); Azevedo, , Diniz, Fonseca, Azevedo, & Evangelista,(2015). ; Fayed, Wahabi, Mamdouh, Kotb, & Esmaeil, (2017). Other studies indicate that the burden, hardship and lack of life-skills in the upbringing of the child are the frequent adverse psycho-social outcomes associated with child marriage (Ahmed, Khan, Alia, & Noushad, 2013). Child right advocates also claimed that child marriage is associated with a kind of "abuse" where a child is robbed of her childhood and forced to endure a marriage of disempowerment and control by the dominant partner (Ahmed, Khan, & Noushad, (2014) ; Sharifah, (2017).

Nurses are health educators and often are confronted with the issue of child marriage and are in the position to educate the community on the evidence base adverse outcomes of child marriage . However, nurses themselves may also harbour rigid religio-cultural worldview that may be contrary to evidence-based findings and thus the rationale for this study to assess the stance of student's nurses regarding child marriage . The purpose of the study is to gauge the perception of Universiti Malaysia Sabah undergraduate nurses towards Child marriage .

LITERATURE REVIEW

In 1995, Malaysia ratified the United Nations Convention on the Rights of the Child (CRC,1995) an international human rights treaty which upholds the civil, political, economic, social, health and cultural rights of all children below 18 years. Adopted by the United Nations General Assembly the CRC(1995) treaty is based on four core principles; namely the principle of non-discrimination to save guard the best interests of the child, the right to life, survival and development, and considering the views of the child in decisions which affect them according to their age and maturity.

For the marriage process, Malaysia has a dual legal system, which means that the minimum age of marriage can be determined by either civil law or Sharia (Islamic) law. Non-Muslims may only marry from the age of 18, but girls can be married as early as 16 provided they or their parents have the permission of the State Chief Minister. The minimum age of marriage is 16 for Muslim girls and 18 for Muslim boys(Noor & Samuri, 2018). Crucially, exceptions can be made for girls or boys to marry at a much younger age if they obtain Islamic courts' consent. Thus, the lower age limit for both civil and Islamic marriages is determined on the "discretion" of authority and this leaves the matter to open debate and conflict of views to what constitutes as the rightful lower cut off age of marriage . Both laws do not specify the exact lower age limit that a person can get married, which can be as low as 9 years of age. Thus, both civil and Islamic marriage leaves the decision of the legal age of marriage to the Chief Minister or the Shariah judge. The vagueness of interpretation of the lower cut off legal age of marriage is further compounded as the civil law uses the term "at discretion" of authority and the Islamic Family law uses the term "in certain circumstances". While it can be argued that this can be vague, it also allows leeway for decision-makers to consider

actuating reasons for a particular marriage, along with current social and cultural considerations, before allowing or disallowing it.

According to Noor & Samuri (2018), there are numerous factors that lead to underage marriage in Malaysia. Among these are pregnancies before marriage and parents' decision to curtail their children's involvement in deteriorating moral problems. Other factors associated with underage child marriage includes such as adherence to customary practice and traditions and family financial problems which may be the root cause perpetuating this trend.

METHODOLOGY

This study is a quantitative, cross-sectional survey design, using a structured questionnaire to assess the perception of student nurses toward child marriage . The study population involved 156 students currently pursuing their nursing diploma in Universiti Malaysia Sabah. The study sample of 100 (N) respondents were selected from year 1, year 2 and year 3 students (year 1 n=35, year 2 n=35, and year 3 n=30) by random sampling. Random selection was generated using Microsoft Excel based on the full name list of all students of each year.

The structured questionnaire used in this research was developed base on literature and face-validated by two content experts with an obstetric background. The questionnaire consisted of two parts: part 1 questions captured data on demographics such as; gender, age, race, religion, current year of study and place of family origin (rural or urban). The second part of the questionnaire consists of 7 questions pertaining to the perceptions of nursing students towards child marriage which require Likert type response from strongly disagree, disagree, neutral , agree and strongly disagree. A pilot study with 30 respondents not involved in the main study, found a reliability coefficient Cronbach's alpha =0.86 and was deemed acceptable and no subsequent modification was made on the questionnaire. Returned questionnaires were checked for completeness and data was entered in SPSS IBM version 23, cleaned and analysed using descriptive statistic . Inferential statistic, Chi-square and Fisher exact test was used to identify the association of selected respondents' demographics with perception response.

RESULT

In this study, all questionnaires distributed were returned with a respond rate of 100%. Table 1 shows the demographic characteristic of the 100 (N) respondents who participated in this study. The mean age of the respondents in this study was 19.38 years ranging from 18-22 years. By gender , majority of the respondents were female 68% (n=68) and male 32% (n=32). By ethnicity , of the 100 respondents who participated, the majority were Dusun 46% (n=46), 10% (n=10) were Bajau 6%(n=6) Chinese, and others comprising of Rungus, Murut, Iban, Bugis 34% (n=34). By religion , half 50% (n=50) of the respondents were Muslims and the other half were Christians. In this study, 35% (n=35) respondents were from year one nursing students, 35% (n=35) from year two and 30% (n=30) were year 3 nursing students. Majority of the respondents 66%(n=66) were of urban origin , while 34%(n=34) were of rural origin.

Table 1: Socio-Demographic Characteristic of Respondents

Variables		Frequency	
		%	n
Age (mean 19.38, range 18-22)	18 -20 years	50	50
	>21 years	50	50
Gender	Male	32	32
	Female	68	68
Ethnicity	Bajau	10	10
	Chinese	6	6
	Dusun	46	46
	Others	38	38
Religion	Islam	50	50
	Christian	50	50
Year of Study	Year 1	35	35
	Year 2	35	35
	Year 3	30	30
Family`s Origin	Urban	66	66
	Rural	34	34

Table 2 : Perception of Child marriage

No	Item	Strongly disagree %	Disagree %	Unsure %	Agree %	Strongly agree %
1	I support child marriage.	28	44	20	6	2
2	Child marriage can be allowed in pregnancy /rape to protect honor.	2	16	40	36	6
3	Child marriage sanctioned by religion and culture.	2	22	34	40	2
4	Child marriage is associated with the obstetric complication.	2	16	40	36	6
5	Child marriage is caused by poverty.	38	32	16	6	8
6	Child marriage causes a psychosocial problem.	22	18	12	18	30
7	Child marriage violets the rights of the child	2	20	34	42	2

Table 2 shows the perceived response of respondents to the various statement regarding child marriage. The following are highlights of relevant findings of interest. Q1 explored respondent's stance towards child marriage found 8% of the respondents supported child marriage and 20% were neutral or ambivalent. Q2 posit the statement whether child marriage should be allowed in circumstance if the child is pregnant or is raped, 42% agreed . Q3 statement explored respondents' religious-culture view on child marriage, 42% agreed that child marriage is culturally sanctioned. Q4 gauged respondents' knowledge on the obstetric complication and child marriage, 70% did not agree the child marriage has adverse obstetric risk.

Table 3 : Association of Demographic variable with child marriage perception.

Demographics		Child Marriage Be Allowed in Pregnancy/ Rape to Protect Honor.			Child Marriage Sanctioned by Religion and Culture.		
		% Agree	Do not agree	T-statistics and P value	%Agree	% Do not agree	T-statistics and P value
Religion	Muslim	40	1	Fisher Exact =5.10 P=0.03*	39	2	Fisher Exact =4.93 P=0.02*
	Christian	2	17		3	22	
Gender	Male	18	14	X ² = 0.07 P=0.79	18	14	X ² = 0.08 P=0.69
	Female	38	30		38	30	
Year of study	Year 1	9	9	X ² = 0.06 P=0.75	8	10	X ² = 0.09 P=0.81
	Year 2	10	12		11	11	
	Year 3	11	9		10	10	
Family origin	Rural	30	2	Fisher Exact =3.10 P=0.02*	38	2	Fisher Exact =3.10 P=0.04*
	Urban	4	16		3	22	

* Significant at a error of 0.05

Table 3 shows the association of selected demographics of respondents with perception towards child marriage. Among relevant findings, respondents of Muslim faith and rural origin were significantly more likely to support child marriage in special circumstance to protect honour in cases of pregnancy and rape (p =0.03) . Similarly, respondents of Muslim faith and of rural origin was found to significantly more likely to view child marriage as a culturally normative practice (p=0.04) .

DISCUSSION

In this study of a cohort of 100 (N) nursing students, the majority (72%) of the students did not support underage child marriage (table 2). However, 20% of the students were neutral in their stance regarding child marriage and a small proportion of students, 8% agreed that child marriage be allowed. It is possible that although majority of students are against child marriage, a small proportion of students may be influenced by the orthodox cultural or religious mindset that child marriage should be allowed in certain circumstances despite contrary evidence of devastating obstetric outcome (Sharifah, 2017). In the context of the student nurses in this study, the finding implies there is a knowledge gap among a small proportion of student nurses. This gap in knowledge can be addressed by introducing an add on learning -module on the bio-social implications of child marriage for nursing students as part as their requisite training curricula.

Another significant finding in this study is that 42% of respondents held the view that child marriage is an acceptable practice in some circumstances, such as out of wed-lock pregnancy, especially where family reputation and honor is at stake. It is possible that students who held such notion could have been shaped by the Malay worldview '*halalkan yang haram*' which in English means 'legitimize what is impermissible', which is a common rhetoric held by Muslims in Malaysia (Valentina, Shareena, Syarifatul & Andi, 2018). In this regard, a small proportion of student in this study perceives that it is better for an underage girl to get married if she becomes pregnant out of wedlock to preserve the dignity and the honor of the family. Similarly, in circumstances where a child is a raped victim or sexually abused, it has become customary practice, to marry the child off to the perpetrator. Besides this, Adamu, Yusuf, Tunau & Yahaya (2016) in their study found that circumstances that perpetuate child marriage is parental belief that marriage will resolve and cure deviant sexual behavior such as homosexual or curtail promiscuous behavior.

Another interesting finding in this study is that half the respondents (42% as in table 2), held the view that child marriage is sanctioned by his or her religious tenets and accepts it as a culturally normative practice. In Malaysia, where the population is Muslim, a substantial proportion of child marriage is often justified as a religious obligation which is permissible (Sharifah, et al (2017); Rafeah (2015). Similarly, in Sabah, among indigenous rural communities , for instance among the Rungus and Muruts, child marriage is a widespread phenomenon and is considered a normal cultural -customary practice. There are instances where children as young as 11 years old are married off and often had not only have to endure the excruciating ordeal of childbirth but also take on the arduous task of adult responsibility in upbringing the child thereafter (Lasimbang, 2016). Evidence from studies indicates that such redundant cultural practices can be altered by education and it is hoped that with progress and development, such orthodox practices regarding child marriage can be slowly eradicated(Valentina, et al, (2018); Sharifah, (2017); Rafeah (2015). In this regard, nurses who serve in the rural community can take on the role to advocate and educate rural ethnic communities on the adverse sequelae of child marriage and help deter the practice.

Another issue explored in this study was regarding the awareness among student nurses pertaining to the obstetric complications associated with child marriage and pregnancy. There are well established research evidence and systematic reviews that indicate underage pregnancy is associated with a variety of obstetric complications such as preterm labor, Cephalo-pelvic disproportion, postnatal complication etc. (Azevedo, et al., (2015); Kawakita, et al.,(2017); Fayed, et al,(2017)). However, despite this prevailing adverse evidence, findings in this study indicate that a small proportion of student nurses (table 2, 18% disagree,

40% unsure) were unaware of the obstetric risks associated with underage pregnancy. A study by Kim, et al (2013) also found a similar knowledge gap among student nurses in their study regarding teenage pregnancy. This finding also indirectly implies, that the knowledge gap is possibly due to the short comings in the current nursing -obstetrics teaching-module where the emphasis of teenage pregnancy related obstetric complication may have been overlooked and should be included as part of the learning outcome. Empowering nurses with the key knowledge that child marriage is associated with devastating obstetric complications can be used as a primary strategy by nurses to advocate and deter child marriage practices among the community.

Studies that examine causative factors leading to child marriage often report poverty, low economic status, and a lack of education as significant demographic triggers commonly associated with child marriage. (Noor & Samuri, (2018); Yadufashije, Sangano & Samuel, (2017). However, in this study, a substantial proportion of the respondents (70%) report being unaware that poverty is a significant key trigger associated with child marriage practice. This is particularly relevant in Sabah, as among all the states in Malaysia, Sabah has the highest rate of poverty and thus is possible many of the child marriage seen in the rural communities could be triggered by this factor. Nurses need to be aware that poverty is a strong social trigger and need to critically assess the context of the child`s parental socio-economic status when confronted with an issue of child marriage.

Another finding in this study revealed that 40% of the respondent was not aware of the adverse psychosocial consequences of child marriage. Child marriage has a devastating impact on the social and psychological wellbeing of the child (Valentina et al, 2018). A child which is married off can be subjected to emotional or physical abuse by the dominant partner, experience anguish and disempowerment, lose autonomy and erosion of educational opportunities and fail in the attainment of life aspirations (Ahmed, 2014). Often, the complex psychosocial problems surrounding child marriage may be covert and requires insight and maturity to understand and perhaps is the probable reason why the young students in this study report being unaware of the complex psychosocial implications of child marriage.

Study Limitations

The Likert -neutral rating option of the instrument used in this study resulted in 30 to 40% of respondents giving neutral response to certain items. The neutral response may be indicative of the respondents` covert perception to either agree or disagree and thus skew accuracy of the study`s findings.

CONCLUSION

This study examined student nurse`s perception of child marriage and found that student nurses were aware of the contemporary issues surrounding child marriage. However, a small proportion of the student nurses held misperception regarding the adverse obstetric and psychosocial sequelae associated with child marriage. This gap in misperception can be remedied through an add-on educational intervention regarding child marriage into the current obstetric teaching module.

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CABARAN GURU BELAJAR SEPARUH MASA, BERKERJA SEPENUH MASA

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ABSTRAK

Mengikuti program pengajian separuh masa bukanlah merupakan satu perkara yang asing malah menjadi satu keperluan dalam kalangan guru. Namun, terdapat guru yang tidak mampu menamatkan pengajian. Kajian ini bertujuan untuk mengenal pasti cabaran yang menyebabkan guru tidak berjaya meneruskan pengajian sehingga selesai. Kajian adalah berdasarkan reka bentuk kualitatif dengan menggunakan pendekatan kajian kes. Seramai lima orang guru yang tidak berjaya menamatkan pengajian separuh masa dipilih dengan menggunakan persampelan bertujuan. Temu bual separa berstruktur digunakan untuk pengumpulan data. Data dianalisis dengan menggunakan kaedah tematik. Dapatan kajian menunjukkan bahawa guru terpaksa menamatkan pengajian separuh masa disebabkan oleh tiga cabaran utama. Cabaran pertama iaitu dilemma pengurusan masa mempunyai tiga sub-tema iaitu (a) antara kerja dengan belajar; (b) antara keluarga dengan belajar; dan (c) antara masa pelajar dengan masa pensyarah. Cabaran kedua berkaitan dengan kesukaran penerimaan pembelajaran. Seterusnya cabaran ketiga adalah berkisar dengan kekangan kewangan dengan jarak pusat pengajian. Hasil kajian boleh digunakan sebagai pertimbangan yang perlu dilakukan oleh guru yang mempunyai hasrat untuk belajar secara pengajian separuh masa agar mereka berjaya menamatkan pengajian dan membuat persediaan yang sewajarnya.

Kata Kunci: Guru, pendidikan separuh masa, cabaran

PENGENALAN

Pendidikan separuh masa merupakan salah satu mod pengajian ditawarkan di institusi pengajian tinggi (IPT), disamping mod pengajian sepenuh masa. Menurut John Butcher dan John Rose-Adams (2015), walaupun secara tradisinya pengajian separuh masa sering dilihat sebagai *opposite* kepada pengajian sepenuh masa, namun jangka masa pengajian antara kedua-dua mod tersebut tidak jauh berbeza. Callender and Feldman (2009) menyatakan bahawa konsep pelajar *part-time* kebiasaannya dirujuk kepada mereka yang belajar dan dalam masa yang sama juga mereka berkerja. Oleh itu, pendidikan separuh masa menyediakan peluang kepada mereka yang berkerja untuk terus meningkatkan potensi diri melalui konsep pendidikan sepanjang hayat (*long life learning*) (Pollard, Newton & Hillage, 2012). Dalam konteks profesion perguruan, mod pengajian separuh masa ini memberi peluang kepada guru untuk terus belajar pada masa yang sama mereka juga mengajar di sekolah. Ini sejajar dengan keperluan guru yang sentiasa dituntut untuk mempertingkatkan kualiti diri agar mereka mempunyai ilmu yang sentiasa relevan dengan keperluan semasa (Wan Noraini & Noraini, 2011).

Mengikuti pengajian separuh masa akan melibatkan perubahan dalam rutin kehidupan harian seorang kerana disamping keperluan memenuhi tuntutan kerja mereka juga perlu memberikan komitmen kepada pembelajaran. Walaupun mereka hanya perlu menghadiri kelas pada hujung minggu tetapi proses pembelajaran berlaku secara berterusan seperti mencari bahan pembelajaran, membuat perbincangan, menyiapkan tugas dan membuat ulangkaji (Kember et al., 2005). Manakala, keperluan untuk menghadiri kelas pada hujung minggu mengubah aktiviti terluang yang kebiasaannya diberikan kepada keluarga dan aktiviti sosial (Saadon, 2006). Dari aspek kewangan pula, terdapat pertambahan bebanan kerana tanggungjawab bukan sahaja perlu membayar yuran pengajian, malah perlu perbelanjaan untuk memenuhi keperluan pembelajaran seperti membeli buku rujukan, keperluan alat tulis dan kos percetakan (Becker, 2004). Oleh yang demikian mengikuti pengajian separuh masa adalah sangat mencabar kerana ianya melibatkan pertambahan tanggungjawab yang perlu dilaksanakan dengan menggunakan sumber yang sedia ada seperti masa dan kewangan.

Mengubah daripada sesuatu yang telah menjadi kebiasaan memang satu perkara yang sukar untuk dilakukan (Karsono, 1993). Kegagalan untuk menghadapi cabaran akibat daripada perubahan yang perlu dilalui apabila mengikuti pengajian separuh masa boleh menyebabkan kegagalan untuk *graduate on time (GOT)* serta keciciran daripada pengajian. Menurut Naib Canselor, Malaysia Open University, Prof Emeritus Tan Sri Anuwar, keciciran pelajar merupakan antara cabaran yang biasa ditempuhi dalam pengajian separuh masa atau pengajian jarak jauh (Berita Harian, 29 Julai, 2010). Oleh yang demikian, masalah tangguh pengajian buat sementara waktu sering berlaku dalam kalangan mereka yang mengikuti pengajian separuh masa. Kepelbagaian komitmen yang perlu dilaksanakan oleh pelajar separuh masa boleh menjejaskan matlamat untuk menamatkan pengajian separuh masa (Tinto, 2004). Mengikuti pengajian separuh masa boleh mengakibatkan kecelaruan dan tekanan hidup akibat daripada pembahagian komitmen yang banyak (Kember et al., 2005).

Dalam konteks sebagai seorang guru pula, mereka bukan sahaja berhadapan dengan pelbagai tugas, malah berhadapan dengan pelbagai situasi yang boleh menyebabkan tekanan. Dari aspek skop tugas, guru bukan sahaja mengajar, malah perlu memikul pelbagai tugas pengurusan seperti aktiviti kokurikulum, hal ehwal murid, pentadbiran dan pengkeranian serta kerja-kerja tambahan lain yang perlu dibuat mengikut keperluan semasa (Zuhaili & Ramlee, 2017). Selain daripada skop tugas yang luas, guru juga terdedah dengan pelbagai situasi yang boleh menyebabkan tekanan seperti tingkah laku pelajar, hubungan dengan rakan sekerja,

hubungan dengan ibu bapa pelajar, penghargaan, dan sokongan (Tajulashikin et al., 2013). Berdasarkan kepada situasi tersebut, belajar separuh masa boleh menjadi satu cabaran yang kepada seorang guru kerana pertambahan tuntutan kerja dan tuntutan belajar. Boleh memberi kesan kepada komitmen pengajian separuh masa.

Oleh yang demikian, terdapat keperluan untuk memahami secara mendalam cabaran yang dihadapi oleh guru sehinggga menyebabkan mereka terpaksa berhenti pengajian. Walaupun tiada statistik rasmi yang menunjukkan kegagalan guru menamatkan pengajian, secara realitinya terdapat sebilangan guru yang tidak dapat meneruskan pengajian, setelah membelanjakan begitu banyak wang dan masa. Kajian lepas masih kurang dan terhad kepada kajian kuantitatif. Sampel kajian lepas juga terhad kepada persepsi mereka yang masih dalam pengajian separuh masa. Masih kurang kajian yang melibatkan mereka yang telah berhenti pengajian. Oleh yang demikian, objektif utama kajian ini adalah untuk meneroka cabaran guru belajar separuh masa yang menyebabkan mereka terpaksa menamatkan pengajian.

Hasil kajian ini bukan sahaja menambah kefahaman secara teoritikal tentang masalah pelajar yang belajar sambil berkerja secara umumnya, dan kerjaya guru, secara khususnya, malah boleh dijadikan panduan kepada guru lain agar dapat membuat persediaan dan pertimbangan yang sewajarnya terhadap aspek-aspek yang perlu diberikan perhatian semasa membuat keputusan untuk belajar separuh masa.

TEORI EKOLOGI BRONFENBRENNER

Kajian ini didasari oleh Teori Ekologi Bronfenbrenner iaitu teori perkembangan manusia yang dipengaruhi oleh beberapa lapisan persekitaran iaitu mikro sistem, mesoisitem, ekosistem dan makrosistem (Bronfenbrenner, 1988; 1989). Persekitaran tersebut akan mempengaruhi perkembangan tingkahlaku individu. Diaplikasikan dalam kajian ini, individu adalah merujuk kepada guru, maka perbincangan menjurus kepada bagaimana persekitaran memberikan cabaran kepada guru yang mengikuti pengajian separuh masa.

Lapisan persekitaran pertama iaitu mikrosistem adalah persekitaran yang paling dekat dengan individu. Ini termasuklah ahli keluarga terdekat seperti ibu bapa, adik beradik dan saudara mara. Dalam konteks guru, individu yang paling dekat dengan mereka ialah ahli keluarga seperti ibu bapa, isteri dan anak-anak. Faktor berkaitan dengan keluarga merupakan salah satu faktor yang boleh memberi cabaran kepada guru pengajian separuh masa. Ini adalah kerana keluarga mempunyai pengaruh memainkan peranan penting dari aspek sokongan moral kepada guru. Kajian seawal 1967 oleh Holmes dan Rahe faktor keluarga merupakan satu sokongan yang sangat penting untuk kejayaan seseorang. Samada guru wanita atau lelaki, masing-masing mempunyai komitmen kepada keluarga. Guru wanita yang sudah berkahwin mempunyai peranan sebagai isteri di rumah. Mereka mempunyai tugas untuk menguruskan tempat kediaman dan anak-anak. Manakala guru lelaki yang sudah berkahwin juga memikul tanggungjawab sebagai ketua keluarga di rumah. Sementara itu guru yang masih bujang juga mempunyai komitmen kepada ibubapa mereka. Pelajar separuh masa boleh mengabaikan tugas mereka kepada keluarga kerana mereka perlu menghadiri kuliah pada hujung minggu serta melaksanakan tugas sebagai pelajar selepas waktu berkerja (Pollard, Newton & Hillage, 2012). Ini boleh menimbulkan konflik berkaitan dengan peranan kerana kedua-dua tanggungjawab memerlukan perhatian yang sewajarnya. Disamping konflik berkaitan dengan peranan, guru pengajian separuh masa juga tidak boleh terkecuali daripada berhadapan dengan pelbagai masalah keluarga seperti masalah perhubungan suami isteri,

masalah anak-anak, adik beradik, dan ibubapa (Holmes dan Rahe, 1967; John Butcher & John Rose-Adams, 2015). Oleh itu hal ehwal berkaitan dengan keluarga boleh mendatangkan tekanan kepada guru yang mengikuti pengajian separuh masa, seterusnya boleh menyebabkan mereka tidak fokus serta tidak mampu meneruskan pembelajaran. Seterusnya lapisan kedua ialah mesosistem iaitu menerangkan perhubungan antara mikrosistem dengan mikrosistem yang lain. Sebarang perkara yang berlaku dalam satu mikrosistem dapat mempengaruhi interaksi dengan mikrosistem yang lain (Bronfenbrenner, 1986). Dalam konteks seorang guru, masalah yang berlaku dirumah boleh mempengaruhi tingkahlaku ditempat kerja dan juga persekitaran yang berkaitan dengan pembelajaran seperti dalam tugas kumpulan dan sebagainya. Begitu juga persekitaran sekolah juga boleh mempengaruhi komitmen terhadap tugas pembelajaran separuh masa.

Lapisan ketiga pula iaitu ekosistem merupakan pengalaman dengan persekitaran yang tidak melibatkan guru secara langsung tetapi keputusan diambil dalam persekitaran tersebut memberi kesan kepada guru. Situasi ini boleh dikaitkan dengan pelbagai perubahan yang diputuskan di peringkat atas mempunyai kesan terhadap guru (Hazri, 2014). Guru bukan sahaja berhadapan dengan pelbagai perubahan yang berlaku dari semasa ke semasa, malah mempunyai pelbagai tugas seperti guru disiplin, kerja-kerja perkeranian, menjadi jurulatih sukan, mengiring pelajar ke pertandingan yang disertai oleh pihak sekolah serta banyak lagi tugas-tugas lain (Norasid & Hamzah, 2014; Abdull Sukor, Abd. Rahim & Mohamad Yazi, 2006). Guru yang mengikuti pengajian separuh masa perlu membahagikan masa yang sedia ada supaya boleh memberikan tumpuan kepada tugas sebagai pelajar. Mereka juga mempunyai tanggungjawab pembelajaran yang sama seperti pelajar sepenuh masa. Mereka tidak terkecuali daripada membuat tugas, mencari bahan-bahan rujukan, membuat ulangkaji, membuat perbincangan dan penyelidikan. Semua tugas tersebut perlu dilaksanakan secara berterusan. Ini boleh menjadikan satu tekanan kepada guru dari aspek pengurusan masa kerana dalam masa yang sama tugas sebagai guru di sekolah juga semakin bertambah (Azita, 2012). Keperluan untuk membahagikan masa antara belajar dan tanggungjawab ditempat kerja yang semakin bertambah menjadi satu punca tekanan kepada pelajar separuh masa (Macan, Shahani Dipboye & Philips, 1990).

Lapisan terakhir iaitu makrosistem adalah persekitaran luas mempengaruhi tingkahlaku yang melibatkan norma-norma masyarakat dan perundangan. Dalam konteks institusi pendidikan di IPT, perasaan seperti *sense of belonging* sebagai pelajar sama seperti pelajar sepenuh masa adalah sangat penting, walaupun mereka merupakan pelajar separuh masa yang tidak sepenuhnya berada dalam kampus (Kember, Kenneth & Li, 2001). Guru tidak terkecuali daripada persekitaran makro sama ada dalam organisasi pendidikan yang lebih luas ataupun dalam masyarakat secara umum. Dalam organisasi pendidikan secara umumnya, guru mempunyai tanggungjawab untuk memastikan pencapaian objektif pendidikan negara tercapai (Hazri, 2014). Dalam konteks bermasyarakat pula, setiap individu mempunyai peranan yang luas atau tuntutan dalam kehidupan bermasyarakat. Ini termasuklah tanggungjawab sosial dalam pembangunan komuniti, amalan ziarah menziarahi, dan bantu membantu (John Butcher & John Rose-Adams, 2015).

METODOLOGI KAJIAN

Kajian ini adalah berdasarkan reka bentuk kualitatif sepenuhnya dengan menggunakan pendekatan kes. Kajian dijalankan di negeri Sabah. Seramai lima orang responden kajian dipilih dengan menggunakan persampelan bertujuan. Responden kajian merupakan guru yang

pernah mengikuti pengajian separuh masa, namun membuat keputusan untuk tidak meneruskan pengajian. Pengumpulan data dilakukan dengan menggunakan temu bual separa berstruktur. Data di analisis dengan menggunakan analisis tematik.

DAPATAN KAJIAN

Latar belakang responden

Jadual 1 menunjukkan latar belakang lima responden yang terlibat dalam kajian ini.

Jadual 1 : Latar Belakang Responden

Responden (Nama samara)	1 (Cikgu Zaki)	2 (Cikgu Peter)	3 (Cikgu Lina)	4 (Cikgu Ana)	5 (Cikgu Abu)
Jantina	Lelaki	Lelaki	Perempuan	Perempuan	Lelaki
Status	Berkahwin	Berkahwin	Berkahwin	Berkahwin	Berkahwin
Umun/tahun	48	51	48	40	38
Tempoh perkhidmatan	20 >	22	23	12	11
Bangsa	Dusun	Dusun	Dusun	Melayu	Jawa
Kelulusan akademik	Sarajana Muda	Sarajana Muda	Sarajana Muda	Sarajana Muda	Sarajana Muda
Gred	48	48	44	44	44
Jawatan di sekolah	Guru Akademik Tingkatan enam	Kauselor Pelajar	Kaunselor Pelajar	Ketua Panitia Pendidikan Islam	Ketua Panitia Bahasa Arab
Pendapatan kasar	8000 >	7000 >	7800	6000 >	6000 >

Cabaran pengajian separuh masa

hasil kajian ini mendapati terdapat tiga cabaran utama yang menyebabkan pelajar terpaksa menamatkan pengajian separuh masa. Cabaran pertama iaitu dilemma pengurusan masa mempunyai tiga sub-tema iaitu (a) antara kerja dengan belajar; (b) antara keluarga dengan belajar; dan (c) antara masa pelajar dengan masa pensyarah. Cabaran kedua berkaitan dengan kesukaran penerimaan pembelajaran. Seterusnya cabaran ketiga adalah berkisar dengan kekangan kewangan dengan jarak pusat pengajian.

(a) Pengurusan Masa

(i) Dilema antara komitmen kerja dengan komitmen belajar

Ketidakupayaan untuk membahagikan masa untuk komitmen kerja di sekolah dengan komitmen belajar menjadi satu cabaran sukar kepada guru pengajian separuh masa. Misalnya, menurut Cikgu Zaki, keupayaan beliau untuk melaksanakan tanggungjawab sebagai pelajar semasa mengikuti program pengajian separuh masa serta tanggungjawab sebagai seorang pendidik di sekolah tempat beliau mengajar tidak dapat dilakukan dalam masa yang serentak.

Misalnya Cikgu Zaki berhadapan dengan dilema apabila secara tiba-tiba dikehendaki menguruskan pengendalian satu program di sekolah. Beliau berkata

"Module.. ya module. Jadi mahu kena test, test dalam beberapa bulan lah, kena ambil pelajar. Kena ambil pelajar, jadi...dia punya sasaran tu yang lepasan-lepasan SPM yang tercicir kan, jadi mahu test... mahu test dia punya keupayaan ... apa dia punya impak. Jadi bila saya fikir-fikir kan memang tidak boleh, kalau saya mengajar saya buat lagi tu (belajar separuh masa) memang tidak boleh." (Cikgu Zaki)

Memberikan tumpuan kepada kedua-dua perkara, iaitu belajar dan kerja dalam satu masa yang sama adalah agak sukar. Tumpuan kepada pembelajaran akan menyebabkan tumpuan kepada kerja sekolah menjadi kurang. Menurut Cikgu Lina,

"Tapi kan, kalau begitu mesti ada sesuatu yang perlu kau pilih ba. Jadi itu sebab dia belajar master ni kan, kau punya kualiti kerja untuk kau punya sekolah kan tidak sebaik yang kau tidak belajar bah. Itu kita terpaksa akui. Susah mau fokus dua-dua sekali, untuk jadi saya ingat saya punya kekangan ialah satu masa lah..."

Kesukaran untuk memberikan tumpuan kepada tugas kerja dengan tugas sebagai pelajar menjadi konflik kepada kerana keinginan untuk mencapai kesempurnaan dalam semua komitmen dan tugas yang hendak dilaksanakan.

"...kualiti kerja kau perlu baik, kau punya pembelajaran master pun kau mahu target pointer tinggi. Jadi, kau punya masa kan... begini bah (ketawa), apa tu (ketawa).. bercelaru kau punya pengurusan masa, sebab semua mahu buat dengan baik kan." (Cikgu Lina)

Menurut Cikgu Ana, tanggungjawab sebagai seorang guru lebih diutamakan berbanding dengan memberi komitmen sepenuhnya terhadap program pengajian yang diikutinya.

"Kerja sepenuh masa bah, belajar separuh masa saja... so mestilah banyak masa untuk kerja, macam mana mau kurangkan masa untuk kerja?... nanti sendiri susah juga, kerja tidak siap, tanggungjawab ini, itu tidak siap, nah, nanti sendiri pening...jadi kesimpulannya masa untuk kerja tidak boleh dikurangkan...bertambah adalah, hahaha (ketawa)"

(ii) Komitmen keluarga, komuniti dan komitmen belajar

Responden yang berhadapan dengan cabaran faktor keluarga ini ialah Cikgu Ana dan Cikgu Lina sahaja. Menurut Cikgu Ana, cabaran yang dihadapinya ialah hamil semasa mengikuti program pengajian separuh masa menyebabkan responden tidak dapat meneruskan pengajiannya. Tambahan, responden perlu menjaga anaknya yang baru dilahirkan. Berikut penjelasan Cikgu Ana:

"...masalah yang mengandungi lepas tu... bersalin semua kan lepas tu mahu jaga anak lagi... kecil lagi kan.. arr jadi sebab itu lah yang berhenti tidak sambung-sambung lagi sampai sekarang."

Menurut Cikgu Lina pula, dia dilema untuk meneruskan dalam program pengajian separuh masa disebabkan anaknya yang masih kecil dan masih bergantung dengan susu ibu. Responden akan mengikuti program pengajian separuh masa sekiranya anak responden telah membesar. Cikgu Lina berkata:

"Tapi begitu kan, tengok alamak saya punya budak masih lagi menyusu badan. Berfikir betul saya... Mahu kasih besar dulu la budak-budak."

Cikgu Lina juga menekankan bahawa masa untuk bersama keluarga juga berkurang apabila seseorang wanita itu telah memikul tanggungjawab sebagai seorang ibu dan sangat berbeza dengan pengorbanan masa kaum lelaki. Menurut Cikgu Lina:

"Masa nombor satu lah kalau mama-mama, kau macam mahu pecah sudah kepala mahu bagi masa. Kadang-kadang riiiiinnnn..du.. (ketawa) mahu pergi santai-santai... Betul-betul masa nombor satu kalau mama. Mungkin lelaki-lelaki kurang sikit lah.. masa.. sebab ada isteri kan di rumah... kau terpaksa mengambil tu masa rehat untuk belajar... Jadi tiada masa mau rehat... itu macam sangat-sangat tidak ngam lah sebenarnya, tapi tiada pilihan kan kalau mau juga teruskan belajar"

Keputusan menyambung pengajian separuh masa telah menambah pelbagai komitmen sedia ada menjadi lebih berat. Menurut Cikgu Lina, kesibukan yang melampau akibat memegang komitmen yang banyak menyebabkan responden sukar untuk membahagikan masa yang ada untuk melaksanakan kesemua tanggungjawabnya. Cikgu Lina menjelaskan,

"Kalau saya... satu.. masa. Kita sibuk dengan tugas di sekolah sebagai guru, sibuk lagi dengan keluarga, mama kan... err.. banyak kerja rumah ba, urus anak lagi. Lepas tu... urus komuniti lagi, jawatan kau dalam komuniti. Macam di gereja, di kampung."

Disebabkan dengan pelbagai komitmen yang sedia ada, peruntukan masa untuk belajar menjadi sukar seperti yang dinyatakan oleh Cikgu Lina,

"Lepas tu kan, kau punya masa untuk study tu sangat mencabar ba, berebut rebut rebut... bahagi bahagi bahagi. Adalah siiiikit... sampai masa rehat kau kan... siii..iikitt sudah. Malam itu banyak kau masa... kau ambil masa untuk buat assignment, membaca.. apa itu.. buat research di internet sampai kau punya mata kan keluar sudah ba garis-garis yang di bawah ni."

(iii) Dilema antara masa pelajar dengan masa pensyarah

Menurut Cikgu Zaki, terdapat kesukaran dalam penetapan masa untuk pertemuan dengan pensyarah atau rakan sekuliah. Hal ini kerana masa terluang beliau tidak sama dengan masa terluang dengan pensyarah atau rakan sekuliah untuk melaksanakan tugas kumpulan. Berikut penjelasan Cikgu Zaki:

"...kita kena atur kita punya masa untuk di sekolah, jadi mahu dapat kebenaran juga pula. Biasa kalau... sebab dalam satu sem itu, kadang-kadang... biar pun ini penyelidikan, mau kena jumpa juga penyelia... dalam bila-bila masa dari hari isnin sampai jumaat tu."

"Ah... perjumpaan pun kadang-kadang, kita sudah atur kan, kita sudah atur.. jadi kita sudah minta pelepasan, bila kita apa.. buat appointment dengan... dengan pensyarah tu kan, dia pula ada program. Jadi? Berapa kali tu? Biar pun dalam satu sem kan, pernah dalam dua kali kah tiga kali. Pernah di jalan sana sudah kan, di Tuaran sudah... patah balik.."

Mengulas mengenai pertemuan dengan rakan sekuliah, Cikgu Zaki berkata;

"Kadang-kadang dalam satu sem tu, dia bagi kumpulan, kebanyakan sudah kerja kan, kemudian... kadang-kadang dari daerah-daerah lain... jadi, pernah satu kali tu, bila kami buat dalam anu... tidak.. tidak menjadi. Payah, jadi terpaksa kami datang awal tu, baru buat dalam beberapa jam. Jadi tu apa.. tu kerja pun tidak.. tidak berapa sempurna la tu." (Cikgu Zaki)

Menurut Cikgu Peter pula, batasan perjumpaan dengan pensyarah yang hanya pada hujung minggu memberikan kesukaran untuk perbincangan dengan pensyarah jika ada perkara yang sukar difahami seperti soalan tugasa yang kurang jelas.

"...kalau macam kami ada kuliah kan, dan oleh kerana err.. hujung minggu saja, jadi bila kami ada soalan ataupun.. yang apa ni.. tidak difahami kan, macam susah mahu rujuk ba. Susah macam mahu.. err.. fahami dia punya kehendak soalan, ataupun kod atau istilah kan, terpaksa cari google di apa... di internet, lepas taau tiada nga, aiyaa... susah juga lah." (Cikgu Peter)

Menurut Cikgu Abu pula, cabaran dalam faktor pengurusan masa yang dihadapinya adalah disebabkan jarak untuk mengikuti program pengajian separuh masa tersebut. Perjalanan untuk menghadiri kuliah perlu menggunakan kapal terbang. Cikgu Abu menerangkan,

"...sangat sangat makan masa sebab perjalanan kita dari sini ke KK dalam dua jam setengah, lepas itu penerbangan dua jam setengah, lepas itu daripada airport, airport terdekat pun dekat KLIA lah. KLIA ke Selangor tu dalam emm.. kurang lebih kalau lajulah dua jam setengah jugalah.. tiga jam."

(b) Faktor Penerimaan Pembelajaran

Terdapat tiga responden yang berhadapan dengan cabaran faktor penerimaan pembelajaran ini ialah Cikgu Zaki, Cikgu Peter, dan Cikgu Lina. Cikgu Zaki, misalnya, menghadapi masalah dengan tajuk kajian yang dicadangkan oleh penyelia dengan tajuk yang diminati oleh beliau. Menurut Cikgu Zaki,

"..bila jumpa dengan pensyarah tu kan baru dia bagi tajuk, jadi tajuk itu memang saya tidak minat, bukan saya punya minat lah. Sebab dia mahu buat tu... literasi.. apa ba tu.. errr.. visual..visual leterasi, jadi memang saya tidak minat. Hmm jadi saya pun tidak sambung lah... Bidang itu bukan, bukan saya punya keminatan."

Sebab mula-mula saya punya cita-cita, eh cita-cita... kalau saya pergi ambil master kan, saya mahu buat kajian dalam bidang perniagaan bah... bila diminta buat visual dan literasi, kena buat dua perkara, satu penyelidikan satu kena buat manual. Manual...2 tu.. jadi saya fikir-fikir macam buat p.h.d. sudah itu... susah mau angkat...lagipun saya bukan mahir IT.

Sementara itu Cikgu Peter pula berhadapan dengan cabaran penggunaan bahasa. Beliau sukar memahami pembelajaran kerana hampir kesemua aktiviti menggunakan Bahasa Inggeris.

"..macam kami punya assignment itu bahasa Inggeris, dia punya modul semua bahasa Inggeris lepas tu kami punya kami terpaksa baca dan fahami dan google, tengok dalam kamus, kasih faham tulis sendiri itu soalan atau buka modul tu kan, bahan lepas tu baru kau susun ayat untuk jawab contoh assignment tu dalam bahasa Melayu. Jadi macam.. itulah halangan yang paling paling jelas kalau saya lah dia macam mahu translate translate itu bah." (Cikgu Peter)

Menurut Cikgu Lina pula, masalah yang dihadapinya ialah dari segi daya ingatan semasa belajar disebabkan usianya. Selain itu, penggunaan bahasa untuk subjek tertentu juga merupakan salah satu cabaran yang dihadapi oleh responden. Berikut adalah antara perbualan sokongan yang diperolehi daripada Cikgu Lina: |

"Masalah memori. Kalau sudah berumur kan, kau mahu ingat bukan perkara yang senang ah... banyak pelupa.

(c) Faktor Kewangan

Responden yang berhadapan dengan cabaran faktor kewangan ini ialah Cikgu Peter dan Cikgu Abu. Menurut Cikgu Peter, faktor kewangan menjadi cabaran beliau dalam aspek pembayaran yuran. Responden juga berhadapan dengan masalah kewangan sekiranya jarak pusat program pengajian separuh masa tersebut jauh dari tempat responden. Cikgu Peter menyatakan,

"Satu duit, untuk bayar yuran. Dua, pusat pembelajaran jauh kan, pergi KK, pakai duit lagi semua... atau pergi semenanjung tu kan... jadi, saya tidak lagi bah berminat sambung master."

Cikgu Abu juga menghadapi masalah yang sama iaitu jarak yang jauh menyebabkan beliau tidak meneruskan untuk mengikuti program pengajian separuh masa kerana telah mempengaruhi pengurusan belanjawan mereka dengan ketara. Situasi yang dihadapi oleh Cikgu Abu ini adalah perubahan pusat untuk mengikuti program pengajian separuh masa. Cikgu Abu membuat penjelasan,

"...mulanya pusat belajar sini saja...tiba-tiba kami dapat maklumat pensyarah tu tidak dapat turun kalau setakat dua puluh tiga orang... kami semua tidak mau pergi jauh-jauh, mahal bah belanja"

Semua cabaran yang dihadapi telah mendorong mereka membuat keputusan untuk berhenti daripada pengajian apabila tidak lagi mampu memberikan komitmen yang sepenuhnya.

RUMUSAN

Hasil kajian menunjukkan faktor masa merupakan cabaran utama yang menyebabkan guru belajar separuh masa terpaksa berhenti daripada pengajian. Ketidakupayaan untuk mengimbangi pelbagai komitmen dalam lingkungan masa yang sangat terhad menyukarkan guru untuk memberikan fokus kepada pengajian separuh masa. Memandangkan mereka berkerja sepenuh masa, maka komitmen terhadap kerja tetap diberikan prioriti utama berbanding dengan tugas sebagai pelajar. Selain kerja, mereka juga mempunyai komitmen terhadap keluarga terutama sekali pelajar wanita yang mempunyai tugas untuk menguruskan anak-anak. Oleh yang demikian, pelajar separuh masa perlu mempunyai kemahiran menguruskan masa secara efektif. Ketidakupayaan menguruskan masa menimbulkan dilemma yang akhirnya membawa kepada keputusan untuk berhenti pengajian. Selain kemahiran mengurus masa mereka juga memerlukan sokongan daripada aspek pembelajaran serta kepekaan institusi pengajian untuk mempermudah urusan pertemuan berkala bersama dengan pelajar. Pusat pengajian perlu merangka satu mekanisme yang sistematik untuk memenuhi keperluan guru belajar sepenuh masa.

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PENGGUNAAN MNEMONIK MATEMATIK UNTUK MENINGKATKAN PEMAHAMAN DAN PENGUASAAN TOPIK SEJARAH PERKEMBANGAN DI EROPAH: SATU KAJIAN TINDAKAN DI MRSM KOTA KINABALU

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ABSTRACT

Kajian ini bertujuan mengkaji penggunaan kaedah Mnemonik Matematik dalam meningkatkan pemahaman dan penguasaan topik Perkembangan di Eropah. Metodologi kajian adalah kualitatif, dijalankan di MRSM Kota Kinabalu, Kinarut dengan menggunakan lima orang pelajar aliran Sains yang lemah bab Perkembangan di Eropah sebagai sampel kajian. Persoalan kajian adalah untuk melihat apakah tahap pemahaman, kedua untuk melihat tahap penguasaan, ketiga melihat bentuk graf Mnemonik Matematik dan keempat melihat bagaimana pelaksanaan Mnemonik Matematik kepada sampel kajian. Maka objektif kajian adalah mengenalpasti tahap pemahaman, mengenalpasti tahap penguasaan, menghasilkan graf Mnemonik Matematik dan meneroka cara menggunakan Mnemonik Matematik dalam meningkatkan penguasaan dan pemahaman bab Perkembangan di Eropah. Instrumen kajian terdiri daripada dokumen sokongan seperti latihan dan lukisan graf Mnemonik Matematik, borang pemerhatian, soalan temubual dan borang catatan refleksi pengajaran dan data tersebut dianalisis. Melalui dokumen sokongan, prestasi sampel kajian menunjukkan peningkatan kerana sampel kajian dapat menjawab 16 soalan struktur dan lapan soalan esei pelbagai aras mengikut Taksonomi Bloom serta dapat melukis graf Mnemonik Matematik. Manakala analisis dapatan pemerhatian, temu bual dan catatan refleksi menunjukkan sampel kajian memahami dan menguasai bab Perkembangan di Eropah melalui latihan, lukisan serta memahami simbol graf Mnemonik Matematik. Berdasarkan analisis data tersebut dapat dirumuskan penggunaan kaedah Mnemonik Matematik berjaya membantu sampel kajian memahami dan menguasai bab Perkembangan di Eropah.

Keyword: Mnemonik Matematik, pemahaman, penguasaan, Perkembangan di Eropah

PENGENALAN

Permasalahan dalam subjek Sejarah bukan hanya isu pada peringkat nasional bahkan juga berlaku pada peringkat global. Para pelajar tidak terkecuali daripada menyuarakan pandangan berkaitan keterbebanan mereka dalam subjek Sejarah. Hal ini dapat dilihat dalam kajian yang telah dilakukan oleh Joseph terhadap 415 orang pelajar di Tobago dan Trinidad (Joseph, 2011). Dalam kajiannya telah membuktikan ramai pelajar mengatakan subjek Sejarah adalah subjek yang membosankan dan tidak mempunyai kepentingan masa hadapan berkaitan karier mereka. Kesannya menyebabkan mereka enggan untuk menyambung pengajian pada peringkat lebih tinggi dalam subjek Sejarah. Hal ini telah memberi kesan yang mendalam terhadap polisi penggubalan kurikulum pendidikan di Tobago dan Trinidad.

Situasi yang serupa juga berlaku di Malaysia. Menurut Sharipah Aini dan Arbai'iyah (2015) mengatakan pelajar di Malaysia tidak berminat dengan subjek Sejarah kerana mereka berpendapat subjek Sejarah sukar difahami dan bosan. Antara topik atau bab yang turut menerima tempiasnya adalah bab Perkembangan di Eropah (Najdah, 2012).

SOROTAN LITERATUR

Pengkaji telah menemui beberapa kajian yang menyokong penggunaan mnemonik sebagai bahan bantu ingatan memori. Kajian pertama oleh Hall, Kent dan Mcculley (2012) memperlihatkan keberkesanan penggunaan mnemonik dan peta grafik dalam subjek Pengajian Am termasuk subjek Sejarah untuk menguasai kefahaman teks dan mengingat fakta oleh golongan kelainan upaya. Hasil dapatan kajian mereka melalui intervensi yang dijalankan menunjukkan kaedah mnemonik dan peta grafik saling melengkapi dan sangat membantu pelajar kelainan upaya memahami, mengingat dan menguasai isi kandungan penting dalam buku teks dengan baik. Keterbezaan kedua adalah penyelidik memberi tumpuan kepada pelajar Sains yang lemah bab Perkembangan di Eropah berbanding kajian oleh Hall, Kent dan Mcculley (2012) yang mengkaji pelajar kelainan upaya dibantu oleh kaedah Mnemonik dan peta grafik.

Manakala kajian yang dilakukan oleh Ni (2014) menunjukkan penggunaan mnemonik dapat membantu pelajar tingkatan satu yang cerdas pintar untuk mengingat fakta sejarah. Hasil dapatan kajian melalui keputusan peperiksaan, temubual dan nota pelajar setelah melaksanakan kaedah mnemonik dapat membantu pelajar tingkatan satu yang cerdas pintar mengingat dengan mudah fakta-fakta sejarah disamping dapat mencungkil kreativiti dan minat pelajar terhadap subjek Sejarah. Beza kajian penyelidik dengan kajian oleh Ni (2014) ialah penyelidik memfokuskan pelajar Sains tingkatan 4 bukan tingkatan satu tetapi persamaan kajian kami adalah Ni (2014) dan penyelidik mengkaji pelajar pintar cerdas. Kedua, Ni (2014) menjadikan nota pelajar sebagai salah satu instrumen kajian sebaliknya instrumen kajian penyelidik terdiri daripada dokumen sokongan yang terdiri daripada latihan dan lukisan pelajar berkaitan bab Perkembangan di Eropah menggunakan kaedah Mnemonik Matematik.

METODOLOGI

Kajian penyelidikan menggunakan reka bentuk kajian yang digagaskan oleh Creswell (2009) kerana lebih mudah difahami, menyeluruh dan sesuai dengan kajian yang penyelidikan ingin jalankan. Reka bentuk kajian yang disarankan oleh Creswell (2009) lebih mudah difahami, menyeluruh dan sesuai kerana falsafah, strategi dan teknik kajian dihubungkan dengan jelas. Falsafah kajian ini menggunakan konstruktivisme, reka bentuk kajian adalah kajian kualitatif manakala strategi kajian yang digunakan ialah kajian kes dan teknik yang digunakan ialah gabungan antara temubual berstruktur dan analisis dokumen. Falsafah konstruktivisme dipilih adalah kerana untuk mencari kefahaman berkaitan masalah persekitaran yang dikaji melalui maklumat yang diperolehi melalui temubual berstruktur dan analisis dokumen. Jadi pengkaji akan membina kefahaman daripada analisis data yang dilakukan (Mokmin, 2012).

DAPATAN KAJIAN

Persoalan Kajian Satu: Apakah Tahap Pemahaman Pelajar Sains Dalam Bab Perkembangan Di Eropah

Pencapaian menyeluruh responden pada kelima-lima kitaran adalah sangat baik dan memenuhi objektif kajian iaitu dapat menjawab latihan yang diberikan. Hasil daripada maklumat yang telah dibincangkan di atas pengkaji merumuskan kepada beberapa perkara. Pertama, kelima-lima responden memahami bab Perkembangan di Eropah melalui latihan soalan struktur dan esei yang telah dijawab oleh mereka. Peratusan markah yang diperolehi adalah 100% berbanding sebelum penggunaan kaedah Mnemonik Matematik. Selain itu, jawapan yang diberi oleh mereka walau tidak sempurna pada peringkat awal kajian iaitu kitaran pertama dan kedua tetapi kitaran berikutnya kesemua pelajar kajian telah menunjukkan peningkatan prestasi pemahaman mereka dalam latihan yang dijawab oleh mereka. Kedua, melalui latihan yang dijawab oleh kelima-lima pelajar tersebut telah memperlihatkan bahawa dengan kaedah Mnemonik Matematik pemikiran, pandangan dan idea yang diberikan oleh pelajar-pelajar lebih kreatif, holistik dan matang. Hal ini telah mengembangkan pemikiran aras tinggi pelajar dan sesuai dengan objektif pendidikan matapelajaran Sejarah negara. Ketiga, penggunaan formula dan rumus melalui kaedah Mnemonik Matematik telah diuji penggunaannya oleh pelajar aliran Sains dalam memandu mereka menjawab latihan yang diberikan. Hasilnya menunjukkan penggunaan formula dan rumus Mnemonik Matematik membantu pelajar bukan sahaja untuk memahami bab Perkembangan di Eropah bahkan dapat menjawab soalan latihan dengan tepat seperti penandaan SPM. Justeru, kaedah Mnemonik Matematik telah memberi kefahaman kepada pelajar dalam menjawab latihan yang diberikan.

Persoalan Kajian Dua: Apakah Tahap Penguasaan Pelajar Sains Dalam Bab Perkembangan di Eropah

Semua pelajar dapat menguasai bab Perkembangan di Eropah. Hal ini kerana pelajar-pelajar dapat melukis graf Mnemonik Matematik dengan betul. Mereka juga dapat mengecam, mengenalpasti dan meletakkan setiap formula berdasarkan peringkat-peringkat zaman di Eropah dengan tepat. Selain itu, mereka juga dapat menyimpan imej *modelling* yang ditiru

dengan baik tetapi permasalahan cuma berlaku dalam beberapa perkara kecil sahaja iaitu kesalahan menulis formula yang minimum peringkat awal lukisan iaitu kitaran satu dan kitaran kedua. Kesalahan kedua ialah kesilapan menulis tahun. Dalam masalah ini hanya terdapat seorang sahaja responden yang tersalah menulis tahun iaitu responden tiga. Masalah ketiga pula berkaitan dengan kekemasan. Sejak dari kitaran satu sehingga kitaran kelima hanya responden satu sahaja yang menghadapi masalah kekemasan. Walaupun lukisan yang dihasilkan tidak kemas tetapi masih betul dalam aspek lukisan. Dalam aspek penguasaan graf Mnemonik Matematik melalui lukisan yang dihasilkan, pencapaian setiap responden adalah berbeza. Hal ini kerana responden dua dan responden empat lebih cepat menguasai aspek lukisan kerana sejak dari kitaran pertama hingga kitaran kelima lukisan yang dihasilkan oleh mereka tepat, kemas dan cantik. Hal ini menunjukkan imej peniruan dari model yang diberikan melalui sistem pemprosesan maklumat yang betul. Responden satu, responden tiga dan responden lima masing-masing dengan penambahbaikan dan peningkatan demi peningkatan bagi setiap kitaran. Namun, secara keseluruhannya semua responden dapat melukis graf Mnemonik Matematik dengan baik.

Persoalan Kajian Tiga: Apakah Bentuk Graf Mnemonik Matematik Untuk Membantu Pelajar Sains Dalam Pemahaman Dan Penguasaan Bab Perkembangan Di Eropah

Penggunaan kaedah Mnemonik Matematik menunjukkan bentuk graf Mnemonik Matematik adalah lebih mudah berbanding membaca buku teks. Contohnya, hasil daripada temubual responden menyatakan bab Perkembangan di Eropah adalah susah untuk difahami, kandungan bab Perkembangan di Eropah yang terlalu banyak untuk dipelajari serta mengandungi banyak perkataan. Oleh itu persepsi responden terhadap subjek Sejarah dan bab Perkembangan di Eropah telah menunjukkan perubahan yang lebih baik dan perkembangan yang positif kerana bentuk Mnemonik Matematik yang memudahkan responden memahami serta menguasai topik Perkembangan di Eropah. Mengikut kajian yang telah dilakukan oleh Nur Fazirah dan Siti Nur Diyana (2018) dan dikukuhkan oleh Zarei dan Samira (2013) mengatakan kaedah mnemonik adalah kaedah yang memudahkan pelajar dalam pembelajaran dengan menjadikan maklumat yang kompleks menjadi lebih ringkas dan teratur.

Persoalan Kajian Empat: Bagaimana Pelaksanaan Mnemonik Matematik Membantu Dalam Meningkatkan Pemahaman Dan Penguasaan Bab Perkembangan Di Eropah

Dapatan dokumen sokongan, pemerhatian dan temu bual menunjukkan responden bukan sahaja dapat berfikir, memupuk budaya murni, aktif dalam pembelajaran tetapi juga memberi rasa selesa untuk belajar. Selain itu, melalui catatan refleksi pelajar juga lebih mudah memahami pengajaran kerana daripada lima kitaran tersebut hanya kitaran pertama sahaja pelajar memberi teguran kepada guru untuk memperlahankan pengajaran. Kitaran-kitaran berikutnya pengajaran dilakukan seperti biasa menggunakan kaedah Mnemonik Matematik. Hal ini sekaligus menyebabkan pelajar dapat menguasai pembelajaran menggunakan kaedah Mnemonik Matematik.

PERBINCANGAN

Secara keseluruhannya analisis dapatan daripada pemerhatian telah menunjukkan kelima-lima responden memahami dan menguasai bab Perkembangan di Eropah menggunakan kaedah Mnemonik Matematik. Hal ini dapat dibuktikan melalui analisis dapatan daripada dokumen sokongan. Pertama, untuk melihat kefahaman pelajar sebanyak lapan soalan esei dan 16 soalan struktur diberikan kepada pelajar sebagai penanda aras menilai pemahaman dan penguasaan pelajar dalam bab Perkembangan di Eropah. Penemuan kajian mendapati semua pelajar dapat menjawab semua soalan yang diberikan menggunakan kaedah Mnemonik Matematik mengikut aras Taksonomi Bloom.

Hasil pemerhatian yang telah dijalankan membuktikan bahawa responden dapat memahami dan menguasai bab Perkembangan di Eropah menggunakan kaedah Mnemonik Matematik. Hal ini kerana kaedah Mnemonik Matematik diolah dan disesuaikan dengan keperluan pembelajaran responden yang lemah bab Perkembangan di Eropah. Pengolahan dan penyesuaian yang dilakukan adalah diekstrak dari silibus HSP, buku teks dan buku koleksi soalan SPM tahun-tahun lepas untuk menghasilkan kaedah Mnemonik Matematik supaya pelajar lebih senang memahami serta menguasai bab Perkembangan di Eropah. Dengan penghasilan kaedah Mnemonik Matematik objektif pembelajaran lebih mudah tercapai dalam memberikan kefahaman dan penguasaan yang baik dalam bab Perkembangan di Eropah. Menurut Maria, Samsilah dan Tajularipin (2014) mengatakan setiap warga pendidik perlulah mempunyai sensitiviti dan daya intuisi yang mendalam berkaitan keperluan pelajar dan bersifat anjal dalam modifikasi bahan bantu mengajar supaya proses pengajaran dan pembelajaran lancar bagi mencapai objektif pengajaran pembelajaran yang telah ditetapkan.

Selain itu, catatan temu bual pula telah mengukuhkan dapatan kajian berkaitan penggunaan kaedah Mnemonik Matematik dalam memberi kefahaman dan penguasaan kepada responden yang lemah bab Perkembangan di Eropah. Sebelum penggunaan kaedah Mnemonik Matematik kelima-lima pelajar terbabit sudah mempunyai kaedah pembelajaran tersendiri dalam memahami bab Perkembangan di Eropah namun kaedah tersebut tidak berkesan dalam memberi kefahaman dan penguasaan bab Perkembangan di Eropah. Hal ini menyebabkan mereka tidak dapat menjawab latihan dan tidak berpuas hati dengan pencapaian kefahaman mereka dalam bab Perkembangan di Eropah. Justeru bagi membantu kelima-lima pelajar terlibat penyelidik telah memperkenalkan kaedah Mnemonik Matematik supaya pencapaian mereka dalam memahami dan menguasai bab Perkembangan di Eropah lebih memberangsangkan sekaligus membolehkan mereka menjawab latihan bab tersebut.

Begitu juga dengan dapatan daripada catatan refleksi penyelidik yang memperkukuhkan dapatan kajian tentang penggunaan kaedah Mnemonik Matematik dalam memberi kefahaman dan penguasaan bab Perkembangan di Eropah. Daripada catatan refleksi menunjukkan semua pelajar terbabit memahami dan menguasai bab Perkembangan di Eropah menggunakan kaedah Mnemonik Matematik. Melalui catatan refleksi, penemuan penyelidik adalah pengajaran dan pembelajaran yang dijalankan haruslah mengikut tahap keupayaan pelajar dalam pembelajaran dan amat penting guru perlu memastikan pelajar memahami pembelajaran. Nur Fazirah dan Siti Nur Diyana (2018) mengatakan kaedah

mnemonik adalah kaedah yang efektif membantu pelajar yang menghadapi masalah pembelajaran dan kaedah mnemonik wajar dipraktikkan oleh pengajar dan pelajar.

RUMUSAN

Secara keseluruhannya penyelidikan kajian tindakan ini berharap dapat mengenalpasti cara menggunakan kaedah Mnemonik Matematik untuk meningkatkan pemahaman dan penguasaan kepada pelajar Sains yang lemah bab Perkembangan di Eropah.

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PENGGUNAAN STRATEGI PEMBELAJARAN AKTIF *TEKNIK TRUE MATCH* TERHADAP PENGUASAAN DAN PEMAHAMAN PELAJAR DALAM PEMBELAJARAN DAN PEMUDAHCARAAN (PdPC) SEJARAH

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ABSTRAK

Kajian tindakan ini bertujuan untuk mengkaji tahap pemahaman dan penguasaan terhadap mata pelajaran sejarah dalam topik peristiwa penentangan pemimpin tempatan menentang British. Kajian ini menyenaraikan dua persoalan kajian iaitu apakah tahap penguasaan pelajar terhadap peristiwa penentangan pemimpin tempatan menentang British dan bagaimana penggunaan strategi pembelajaran aktif teknik *true match* dapat membantu meningkatkan kefahaman pelajar terhadap topik peristiwa penentangan pemimpin tempatan menentang British. Pendekatan kajian kualitatif dilaksanakan untuk menjawab persoalan-persoalan ini. Kajian ini dijalankan di sebuah sekolah menengah di daerah Putatan. Seramai enam orang pelajar tingkatan lima pada tahun 2019 dipilih untuk menjadi sampel bagi kajian ini. Instrumen kajian yang digunakan adalah temu bual yang ditriangulasikan dengan pemerhatian dan dokumen sokongan. Hasil kajian mendapati teknik *true match* berupaya meningkatkan penguasaan dan pemahaman pelajar dalam PdPC sejarah.

Kata kunci: Pembelajaran aktif, pemahaman dan penguasaan, sejarah

PENGENALAN

Pembelajaran abad ke-21 yang semakin mencabar memerlukan masyarakat yang seimbang dari aspek intelektual, rohani dan jasmani. Malah tidak cukup sekadar itu, kemahiran abad ke-21 meliputi kebolehan berkomunikasi, kemahiran berfikir secara kritis, kemahiran memimpin individu atau memimpin kumpulan dan menggunakan rasionalisasi (Wats dan Wats, 2009; Rasul et al., 2009; Yussof et al., 2008) adalah diperlukan bagi mendepani cabaran abad ini. Oleh hal yang demikian guru berperanan dalam memastikan pedagogi dan kaedah pengajaran yang digunakan di dalam kelas sesuai dan seiring dengan perkembangan pendidikan yang berlaku seluruhnya.

Kaedah pengajaran yang bercorak konvensional perlu ditambah baik, hal ini kerana pembelajaran dalam konteks abad ke-21 memerlukan pelajar untuk berpartisipasi secara aktif dalam proses PdPC di mana proses tersebut perlu memberi input secara praktikal kepada pelajar.

Pelan Pembangunan Pendidikan Malaysia (PPPM), 2013-2025 yang telah dirangka dapat dijadikan panduan untuk memperbaiki program pengajaran dan sebagai usaha untuk meningkatkan keberhasilan pelajar melalui enam aspirasi yang disyorkan iaitu ilmu

pengetahuan, kemahiran berfikir, kemahiran dwibahasa, kemahiran memimpin, etika dan rohani serta identiti nasional (KPM, 2016).

Mata pelajaran sejarah merupakan tunjang yang penting dalam konteks identiti nasional seperti yang disebutkan dalam enam aspirasi keberhasilan pelajar untuk melahirkan masyarakat yang berjiwa patriotik. Lebih-lebih lagi, matlamat utama mata pelajaran sejarah untuk memupuk perasaan cinta dan taat setia terhadap negara sebagai seorang warganegara (Isa Yaakub, 1996) amat bertepatan dengan Falsafah Pendidikan Kebangsaan (FPK) yang merencanakan pendidikan yang sesuai bagi melahirkan rakyat Malaysia yang bertanggungjawab dan mampu memberi sumbangan kepada Negara di samping memastikan keharmonian dan kemakmuran masyarakat dapat dicapai. Hal ini kerana melalui pembelajaran sejarah sahaja kita dapat mengetahui sejarah silam asal usul sesebuah masyarakat yang terkandung pelbagai nilai untuk diteladani dalam upaya membangunkan masyarakat yang teguh terutamanya di negara-negara berbilang kaum (Mohd Shamsudin dan Shahizan Shahrudin, 2012).

Namun begitu, persoalannya pada hari ini adalah bagaimana menerapkan semangat negara bangsa terutamanya dalam kalangan anak muda di saat dunia globalisasi kian menenggelamkan nilai-nilai jati diri negara dengan modenisasi dan teknologi. Bukan di Malaysia sahaja bahkan melalui dapatan kajian Clark (2008), negara-negara maju seperti Britain, Jerman, Kanada dan Australia juga mengalami isu dalam pembelajaran sejarah di mana mata pelajaran sejarah dipandang enteng dan dianggap sebagai sesuatu yang membosankan. Ini disokong oleh Khoo (2008) yang menyatakan bahawa ramai pelajar menganggap mata pelajaran sejarah sebagai mata pelajaran yang menjemukan dan tidak merangsang mereka untuk berfikir.

Selain itu, mata pelajaran sejarah juga dikatakan padat dengan fakta-fakta seperti nama tokoh, tarikh dan kronologi yang menjadi punca pelajar bosan (Anuar Ahmad et al., 2009) untuk mempelajari mata pelajaran ini.

Perdebatan yang berlegar di atas persoalan yang timbul itu dapat dijawab apabila guru sejarah memainkan peranan penting dalam upaya mengubah persepsi pelajar terhadap mata pelajaran sejarah, terutamanya melalui kaedah pengajaran. Hal ini disebabkan corak pengajaran bersifat konvensional yang sering digunakan oleh guru menjadi penyumbang utama kepada kebosanan pelajar terhadap mata pelajaran sejarah sepertimana yang dinyatakan Anuar Ahmad et al., (2009) bahawa dimensi strategi pengajaran yang bercorak tradisional menyebabkan minat pelajar terhadap mata pelajaran sejarah kian merosot, terutamanya apabila proses PdPC yang berlangsung hanya berpusatkan guru di mana guru memberi penerangan berbentuk syarahan dan tiada aktiviti yang melibatkan pelajar secara aktif.

Keadaan ini menyumbang kepada pelajar yang tidak bersemangat untuk belajar disebabkan oleh suasana kelas di mana pelajar tidak menumpukan sepenuh perhatian dan berbuat bising serta mengganggu emosi pelajar lain. Kenyataan ini disokong oleh Boadu *et al.*, (2015) di mana kajian menunjukkan bahawa guru-guru sejarah masih terikat menggunakan kaedah

pengajaran tradisional dan selesa dengan cara itu, hanya segelintir sahaja yang melakukan inovasi. Dalam usaha memastikan sesuatu pembelajaran itu berlangsung ia perlu melibatkan proses atau aktiviti yang aktif (Meyers dan Jones, 1993) dan guru perlu menyediakan diri dengan ilmu pengetahuan pedagogi yang efektif. Merujuk kepada sukatan pelajaran terbaharu Kurikulum Standard Sekolah Menengah (KSSM) terdapat pelbagai saranan mengenai kaedah pengajaran terkini untuk menarik minat pelajar, antaranya ialah pembelajaran aktif.

Oleh hal yang demikian, dalam kajian ini pengkaji akan menggunakan strategi pembelajaran aktif teknik *true match* sebagai kaedah pengajaran dalam mengajar topik khusus mata pelajaran sejarah tingkatan lima iaitu bab dua daripada Huraian Sukatan Pelajaran (HSP) yang bertajuk nasionalisme di Malaysia sehingga perang dunia kedua. Rasionalisasi pemilihan tajuk ini adalah kerana ia merupakan bab yang padat dengan kronologi peristiwa dan huraian yang perlu difahami dengan betul untuk menguasai bab ini. Justeru itu, untuk mengelakkan pelajar berasa bosan pengkaji akan menggunakan strategi pembelajaran aktif teknik *true match*. Teknik *true match* ini merupakan kaedah yang baharu di mana pelajar dikehendaki untuk memadankan 'kad-kad' mengikut turutan atau padanan yang tepat. Misalnya, pengkaji akan memberikan gambar-gambar tokoh-tokoh pemimpin tempatan dan pelajar perlu memadankan dengan betul peristiwa penentangan dan sebab-sebab penentangan dengan gambar yang betul. Aktiviti ini dilaksanakan dalam kumpulan-kumpulan kecil agar semua pelajar terlibat secara aktif memberi idea dan melengkapkan aktiviti tersebut.

Perkara ini selari dengan gagasan-gagasan konstruktivisme Glasersfeld (1995) yang menyatakan, individu membentuk ilmu pengetahuan mereka dengan mengambil inisiatif sendiri di mana tujuan pembentukan ilmu adalah untuk mengubah suai diri ke dalam persekitaran sekitarnya, seterusnya proses pembentukan ilmu adalah berdasarkan rasionalisasi pengalaman individu.

PERSOALAN KAJIAN

Kajian ini bertujuan untuk menjawab soalan-soalan berikut:

1. Apakah tahap penguasaan pelajar terhadap bab topik perjuangan pemimpin tempatan menentang British selepas menggunakan strategi pembelajaran aktif teknik *true match*?
2. Bagaimana penggunaan strategi pembelajaran aktif teknik *true match* terhadap topik perjuangan pemimpin tempatan menentang British membantu kefahaman pelajar.

OBJEKTIF KAJIAN

Menerusi kajian ini pengkaji berharap dapat:

1. Mengenal pasti tahap penguasaan pelajar terhadap topik perjuangan pemimpin tempatan menentang British selepas menggunakan strategi pembelajaran aktif teknik *true match*.
2. Mengenal pasti bagaimana penggunaan strategi pembelajaran aktif teknik *true match* dalam topik perjuangan pemimpin tempatan menentang British dapat membantu kefahaman pelajar.

SOROTAN LITERATUR

Proses pembelajaran bukan sekadar menghafal maklumat yang disampaikan oleh guru, hal ini kerana maklumat yang dihafal kebanyakannya akan lenyap selang beberapa jam kemudian (Silberman, 2000). Ciri-ciri pembelajaran aktif yang berkesan adalah seperti perbincangan dalam kumpulan, bekerjasama, pembelajaran berpusatkan bahan, pelajar yakin menyuarakan pandangan dan idea sendiri, pelajar bertanggungjawab ke atas pembelajaran mereka sendiri dan guru memberi dorongan dan bantuan kepada pelajar. Dalam hal ini, Umi Masruroh (2017) telah menyokong gagasan ini melalui kajian yang bertajuk implikasi strategi belajar aktif dalam pembelajaran tematik.

Kajian yang dijalankan adalah berbentuk kualitatif kajian kes di mana hasil kajian menunjukkan implementasi elemen belajar aktif berjalan dengan sangat baik apabila pelajar dilihat lebih aktif, kreatif dan berdikari serta terdapatnya peningkatan kualiti proses pembelajaran apabila guru menggunakan kaedah yang bervariasi yang sesuai dengan ciri-ciri pelajar.

Seterusnya, terdapat kajian lepas dijalankan bagi mengkaji respon, sikap dan persepsi pelajar terhadap pembelajaran aktif dan berpusatkan pelajar. Antaranya kajian Adamu Assefa Mirhka (2014), yang menekankan terhadap gaya dan sikap pelajar pelbagai peringkat dalam pembelajaran aktif. Kajian dijalankan berbentuk kuantitatif deskriptif dengan sampel seramai 920 orang pelajar dari gred 10 sekolah kerajaan dan swasta serta pelajar tahun dua universiti. Dapatan kajian mendapati pelajar menunjukkan sikap yang positif terhadap pembelajaran aktif.

Selain itu, kajian yang dijalankan oleh Namangolwa (2013) yang menyentuh partisipatif antara guru dan pelajar dalam memaknai persepsi mereka terhadap metodologi pembelajaran berpusatkan pelajar di sebuah sekolah Menengah Zambia mendapati bahawa pelajar amat berminat dengan pembelajaran berpusatkan pelajar di mana pelajar memberi respon bahawa mereka tidak merasa bosan dan berasa seronok dengan aktiviti yang dilaksanakan oleh guru. Di samping itu, hujah terhadap kajian ini di kukuhkan lagi oleh Rafiza Abdul Razak (2013) yang menggunakan kaedah kualitatif untuk mengkaji strategi pembelajaran aktif secara atas talian dalam novel Bahasa Melayu mendapati penggunaan strategi pembelajaran aktif kolaboratif atas talian dapat membantu pelajar berinteraksi dan menyuarakan pendapat di mana pelajar dilihat boleh berkomunikasi dengan baik, tidak bosan dan menunjukkan tingkah laku yang positif.

Pendekatan pembelajaran aktif juga merupakan satu pendekatan yang penting dalam pengajaran guru yang berkesan di sekolah menengah seperti yang diutarakan oleh Kamarul Azmi Jami (2013) yang mengupas kajian tentang pendekatan pembelajaran aktif berdasarkan pengalaman guru cemerlang pendidikan Islam (GCPI) dalam subjek pendidikan Islam. Kajian

ini dijalankan secara kualitatif menggunakan instrumen temubual sebagai data utama yang ditriangulasikan dengan data pemerhatian dan analisis dokumen.

Hasil dapatan kajian menunjukkan bahawa faedah daripada pembelajaran aktif GCPI memperlihatkan bahawa pelajar cepat mengingati sesuatu fakta, menguasai isi pelajaran, bekerjasama dan berani, meningkatkan kemahiran berkomunikasi serta meningkatkan motivasi pelajar dalam pembelajaran mereka.

Begitu juga, kajian yang dijalankan oleh Hafiza Md Nasir (2012) untuk mengetahui kesan pembelajaran aktif dalam kalangan pelajar berbanding pembelajaran konvensional. Kajian ini dijalankan terhadap 60 orang pelajar menggunakan kaedah eksperimen ujian pra dan ujian pasca. Hasil kajian secara keseluruhannya mendapati pembelajaran aktif berkesan dalam meningkatkan pencapaian pelajar perempuan dalam mata pelajaran Biologi. Walaupun kajian-kajian lepas ini tidak dilaksanakan secara langsung terhadap mata pelajaran sejarah namun konteks pelaksanaannya tetap sama di mana pelajar digalakkan untuk terlibat secara aktif semasa membuat aktiviti di dalam bilik darjah mahupun atas talian.

METODOLOGI KAJIAN

Kajian ini dijalankan secara kualitatif menggunakan kaedah kajian tindakan. Kajian tindakan merupakan suatu proses yang digunakan untuk mengkaji atau menangani isu yang penting dan membimbangkan secara praktikal (Rapoport, 1985) seterusnya disusuli dengan refleksi. Kajian ini dijalankan di sebuah sekolah Menengah daerah Putatan. Pemilihan sampel kajian adalah menggunakan persampelan bertujuan (*purposive sampling*) terdiri daripada enam orang pelajar.

Pelajar yang dipilih ini telah mendapat keputusan yang rendah dalam peperiksaan akhir tahun 2018 dan bersetuju untuk menjadi informan bagi kajian ini. Berdasarkan keputusan ini. Hanya dua orang daripada 25 orang pelajar sahaja yang mendapat markah 40 ke atas, manakala 23 orang pelajar telah mendapat gred G. Jadual 1 menunjukkan keputusan peperiksaan akhir tahun mata pelajaran sejarah bagi tingkatan empat KD.

Jadual 1: Keputusan Peperiksaan Akhir Tahun 2018 Tingkatan 4 KD

Julat Markah (Gred)	Bilangan Pelajar	Peratus (%)
90-100 (A+)	0	0
80-89 (A)	0	0
75-79 (A-)	0	0
65-69 (B)	0	0
55-59 (C+)	0	0
50-59 (C-)	0	0
40-44 (D)	2	8
0-39 (G)	23	92
Jumlah	25	100

Berdasarkan jadual 1, pencapaian pelajar didapati kurang memuaskan dan ini cukup untuk membuktikan bahawa pelajar lemah dalam mata pelajaran sejarah. Antara faktor yang telah dikenalpasti adalah kaedah pengajaran guru yang tidak menarik yang menyebabkan pelajar bosan dan tidak bermotivasi untuk belajar.

Instrumen Kajian

Kajian ini menggunakan kaedah pengumpulan data seperti temu bual dan ditriangulasikan dengan borang pemerhatian, catatan refleksi dan dokumen sokongan untuk mengukuhkan lagi data-data tersebut. Menurut Cannell dan Kahn (1957) kaedah temu bual adalah lebih sesuai digunakan untuk memperolehi data yang mendalam berbanding dengan kaedah soal selidik. Dalam kajian ini, pengkaji telah memilih jenis temu bual semi struktur di mana protokol temu bual disediakan dengan memberi soalan utama sahaja, manakala jawapan yang dijangka adalah bersifat terbuka dan boleh dikembangkan mengikut budi bicara penemu bual dan informan kajian. Soalan utama akan menyentuh aspek-aspek reaksi responden terhadap strategi pembelajaran aktif teknik *true match*, permasalahan yang dihadapi dan cadangan. Perkara ini merupakan satu usaha untuk mendapatkan bukti tentang keberkesanan strategi pembelajaran aktif teknik *true match*. Temu bual akan dijalankan sebelum dan selepas proses PdPC. Selanjutnya, pengkaji menggunakan kaedah pemerhatian untuk mendapatkan maklumat yang lebih mendalam dan terperinci dengan mencatat dalam bentuk nota dan mendokumenkan setiap tingkah laku dan interaksi yang diperhatikan sebelum, semasa dan selepas proses PdPC berlangsung. Di samping itu, analisis dokumen digunakan agar dapat mengesahkan maklumat daripada temu bual dan pemerhatian untuk mengukuhkan dapatan data yang dikumpul sebelum dianalisis.

Analisis Data

Proses analisis data dalam kajian kualitatif perlu dilakukan serentak dengan proses pengumpulan data. Hal ini penting agar pengkaji tidak kehilangan maklumat yang bermakna dan penting akibat lambakan data yang tidak diurus segera (Awang Hamid *et al.*, 2005).

Dalam kajian ini, proses analisis data berlaku sebaik sahaja selesai aktiviti pembelajaran kitaran pertama yang menggunakan strategi pembelajaran aktif teknik *true match*, pengkaji akan mentranskripsikan borang pemerhatian dan temubual yang telah direkodkan kemudian dibaca dan diteliti berulang kali bagi memastikan pengkaji melazimi data yang tersedia (Marshall & Rossman, 2006) selain itu, gambar, pemerhatian dan analisis dokumen juga akan diperhatikan. Semasa membaca transkrip, pengkaji akan mencatat kod-kod yang bersesuaian, intuisi dan idea-idea yang timbul dari semasa ke semasa untuk di analisis dengan lebih lanjut kemudiannya (Creswell, 2012). Proses pengkodan dan pengkelasan kepada tema akan dilaksanakan dengan menjadikan persoalan kajian sebagai panduan (Miles dan Huberman, 1994). Pengkodan data akan dibuat dengan mengkategorikan petikan atau gambar kepada kategori yang tertentu. Seterusnya kod-kod tersebut akan dikelaskan mengikut tema atau deskripsi yang sesuai, pengkaji perlu memastikan adanya hubungan di antara setiap tema atau deskripsi yang telah dibina. Selanjutnya pengkaji akan menjelaskan maksud daripada data-data yang telah diperolehi dan mempersempahakan interpretasi data sama ada melalui jadual, graf atau gambar.

Dapatan Kajian

Selepas proses analisis data dijalankan melalui pengekodan, beberapa kategori telah dibina dan menghasilkan pembinaan tema yang berkaitan dengan penggunaan strategi pembelajaran aktif teknik *true match* dalam topik perjuangan pemimpin tempatan menentang British.

Pendapat tentang topik perjuangan pemimpin tempatan menentang British

Sebelum pelaksanaan teknik *true match*, pada kitaran pertama pengkaji menggunakan kaedah tradisional semasa proses PdPC, kemudian pengkaji menjalankan temu bual awal untuk mengetahui pendapat informan mengenai topik yang menjadi fokus kajian iaitu peristiwa penentangan pemimpin tempatan menentang British. Melalui temu bual pengkaji mendapati tiga orang informan iaitu informan 1 dan 2 berpendapat bahawa topik ini adalah senang. Menurut mereka topik ini mempunyai fakta-fakta sejarah yang mudah diingati dan seperti satu penceritaan. Petikan tersebut seperti;

"Topik ini senang, kerana ia memberi pengajaran. Fakta-fakta juga senang diingati."
(TBI-1, 24/04/2019)

"Topik ini senang, kerana topik ini mempunyai fakta yang menarik."
(TBI-2, 24/04/2019)

Informan 4 pula menambah topik ini seperti satu penceritaan sejarah yang menjadikannya mudah untuk dihafal. Menurut informan 4;

"Sebab ini ada masuk sifat nasionalisme, senang dihafal, dia punya isi-isi dia dan macam cerita bah."
(TBI-4, 24/04/2019)

Dapatan ini disokong oleh catatan pemerhatian yang dilakukan oleh pengkaji semasa proses PdPC berlangsung. Melalui pemerhatian informan 1 memberikan tumpuan sepenuhnya sepanjang proses PdPC dan menjawab ketika ditanya. Manakala informan 2 walaupun mudah terganggu oleh persekitaran namun masih memberi kerjasama ketika ditanya dan diarah melakukan tugas. Begitu juga informan 4 yang dilihat aktif dan memberi respon yang cepat dan betul ketika ditanya. Petikan adalah seperti berikut;

"Melalui pemerhatian, informan ini memberikan tumpuan sepenuhnya sepanjang proses PdPC, menjawab ketika ditanya."
(BPI-1, 24/04/2019)

"Informan ini bersifat agak pendiam, mudah terganggu oleh keadaan persekitaran, misalnya sering melihat ke luar jendela tetapi memberi kerjasama apabila diarahkan untuk membaca nota daripada buku teks."
(BPI-2, 24/04/2019)

"Informan ini dilihat sangat aktif dan mempunyai suara yang lantang. Memberi respon yang cepat dan betul ketika ditanya dan memberi kerjasama yang baik sepanjang proses PdPC."
(BPI-4, 24/04/2019)

Manakala, informan 3 mendapati topik ini adalah susah kerana perlu ingat isi-isi atau fakta sejarah yang kadangkala informan 3 boleh terlupa. Menurut informan 2;

"Pendapat saya, o.. susah sebab susah mau ingat dia punya apa isi dia.. Ingat juga lah tapi pandai lupa."

(TBI-3, 24/04/2019)

Pendapat informan 3 ini disokong oleh informan 5 yang menyatakan bahawa topik ini mempunyai banyak fakta yang perlu dihafal dan banyak yang perlu dihuraikan. Menurut informan 5;

"Susah. Sebab ia banyak fakta yang perlu dihafal dan banyak isi untuk dihuraikan."

(TBI-5, 24/04/2019)

Begitu juga dengan informan 6 yang mengukuhkan pendapat informan 3 dan 5 bahawa topik ini susah. Menurut informan 6 banyak peristiwa yang berlaku yang perlu diingat. Misalnya peristiwa penentangan pemimpin tempatan adalah daripada Tanah Melayu, Sabah dan Sarawak yang mempunyai ramai tokoh.

"Pendapat saya, topik ini agak susah sikit lah, kerana mau ingat semua apa peristiwa yang berlaku seperti nama-nama tokoh."

(TBI-6, 24/04/2019)

Dapatan temu bual ini disokong oleh catatan pemerhatian yang dijalankan pengkaji di mana pengkaji mendapati informan 3 kurang menumpukan perhatian terhadap proses PdPC dan tidak berinteraksi dengan pengkaji secara langsung.

"Informan ini kurang memberikan tumpuan terhadap proses PdPC, tidak membuka buku teks di muka surat yang tepat dan tiada interaksi dua hala dengan pengkaji."

(BPI-3, 24/04/2019)

Berdasarkan dapatan temu bual yang dikumpul jelas menunjukkan bagaimana informan-informan ini mempunyai pandangan berbeza terhadap topik perjuangan pemimpin tempatan menentang British. Ada yang memberi respon yang positif dan ada tidak kurang juga yang memberi respon negatif berkaitan dengan topik peristiwa penentangan pemimpin tempatan menentang British. Tiga orang informan berpandangan topik ini senang dan tiga orang lagi lagi menyatakan topik ini susah.

Pendapat tentang penggunaan teknik *true match*

Selepas pelaksanaan teknik *true match*, pengkaji menjalankan temu bual terhadap informan untu mendapatkan maklumat mengenai pandangan mereka terhadap penggunaan teknik *true match* dalam topik perjuangan pemimpin tempatan menentang British. Mereka memberi pendapat bahawa teknik ini sesuai, senang dan dapat membantu menjawab soalan kertas 2. Petikan adalah seperti;

"Sesuai.."

(TBI-1, 08/05/2019)

"Pada pandangan saya, teknik ini dapat membantu menjawab soalan kertas 2."

(TBI-2, 08/05/2019)

"Hmm, sesuai.."

(TBI-3, 08/05/2019)

"Boleh dikatakan boleh lah. Senang, senang hafal"

(TBI-4, 08/05/2019)

"Pandangan ? Pandangan saya ia sangat senang"

(TBI-5, 08/05/2019)

"Sesuai.."

(TBI-6, 08/05/2019)

Melalui dapatan temu bual tentang penggunaan teknik *true match* dalam topik perjuangan perjuangan pemimpin tempatan menentang British, pengkaji mendapati bahawa kesemua informan setuju dengan penggunaan teknik ini dalam proses PdPC, malah informan-informan telah menunjukkan keterujaan mereka untuk melaksanakan aktiviti ini.

Membantu mengingat isi-isi atau fakta sejarah dengan lebih baik

Melalui temu bual yang dijalankan kesemua informan memberi maklum balas yang positif bahawa mereka dapat mengingat isi-isi atau fakta sejarah. Hal ini kerana mereka menyusun mengikut urutan menjadikan mereka boleh mencari jawapan bagi urutan yang betul dengan lebih terperinci supaya mudah diingati.

Malah ia melibatkan informan secara langsung dalam proses PdPC menjadi seorang yang aktif.

Menurut informan 1 teknik ini dapat membantu mengingat isi-isi atau fakta sejarah kerana kaedah pelaksanaan yang melibatkan penyusunan fakta sejarah mengikut urutan yang betul yang membolehkannya mengingat urutan dengan lebih baik. Petikan adalah seperti;

Informan 1 : "Ya."

Pengkaji : "Sebab?"

Informan 1 : "Kami memadankan mengikut urutan yang betul, yang boleh ingat urutan.."

(TBI-1, 08/05/2019)

Informan 2 pula menyatakan bahawa selepas menggunakan teknik *true match* ini ia dapat membantu memudahkannya mengingat fakta-fakta sejarah hasil aktiviti memadankan kad mengikut urutan. Menurut informan 2;

Informan 2 : "Ya."

Pengkaji : "Sebab apa? Tadi kamu kata boleh lah.."

Informan 2 : "Sebab fakta-fakta dalam kajian(teks) ini mudah diingati."(hasil memadankan kad mengikut urutan)

(TBI-2, 08/05/2019)

Begitu juga dengan informan 3 yang menyokong pendapat kedua-dua informan 1 dan 2, dengan menyatakan bahawa teknik ini membantu mengingat fakta sejarah kerana penglibatannya dalam memadankan kad secara terperinci.

"Hmm. Sesuai, Boleh lah sebab apa tu, kami memadankan dengan terperinci."

(TBI-3, 08/05/2019)

Pendapat yang diketengahkan oleh informan 4 pula agak berlainan. Menurutnya, teknik *true match* dapat menggalakkan mereka membuat aktiviti di dalam bilik darjah dan dapat membantu proses kognitif mereka untuk berkembang. Petikan adalah seperti berikut;

"Boleh, sebab dia dengan cara ini kami dapat buat aktiviti, otak kami dapat berjalan lancar. Boleh hafal."

(TBI-4, 08/05/2019)

Informan 5 juga bersetuju teknik ini dapat membantu mengingat fakta sejarah kerana ia terlibat secara langsung dalam proses PdPC tanpa bergantung sepenuhnya terhadap peranan guru. Keterlibatannya secara langsung dapat membantunya untuk mengingat apa yang telah dipelajari.

"Ya, ia dapat membantu saya untuk mengingat, sebab saya terlibat dalam pelajaran menyusun ikut urutan yang betul. Jadi saya boleh ingat urutan."

(TBI-5, 08/05/2019)

Kenyataan informan 5 itu dikukuhkan lagi dengan pendapat informan 6. Menurut informan ini teknik *true match* ini merupakan satu jalan kerja dalam membantu mereka menyusun peristiwa menjadi suatu urutan yang betul.

"Memang dapat, sebab ia memberi kita kefahaman dan jalan kerja untuk menghafalnya."(menyusun kad mengikut urutan).

(TBI-6, 08/05/2019)

Minat menggunakan teknik *true match* untuk belajar

Melalui temu bual yang dilaksanakan kesemua informan minat menggunakan teknik ini dan berpendapat bahawa teknik ini menyeronokkan kerana teknik ini membantu mereka mengingat urutan peristiwa setiap tokoh-tokoh tempatan, teknik ini juga dikatakan menyeronokkan kerana ia melibatkan interaksi bersama rakan lain yang menjadikan ia tidak membosankan.

"Seronok, sebab menceritakan tentang peristiwa, urutan yang terdapat dalam teks."

(TBI-1, 08/05/2019)

"Seronok cikgu, sebab banyak ramai tokoh-tokoh sejarah yang kita pelajari."

(TBI-2, 08/05/2019)

"Seronok, sebab ia dapat mengingat semua."(Urutan peristiwa penentangan pemimpin tempatan).

(TBI-3, 08/05/2019)

"Ya. seronok, dapat melakukan aktiviti dengan kawan."

(TBI-4, 08/05/2019)

"Ya, ia sangat seronok, sebab saya berasa tidak bosan."

(TBI-5, 08/05/2019)

"Seronok."

(TBI-6, 08/05/2019)

Penggunaan teknik *true match* untuk topik yang lain

Maklum balas pelajar sama ada teknik *true match* ini boleh digunakan untuk topik yang selanjutnya mendapat respon yang positif. Kesemua informan setuju bahawa teknik ini boleh digunakan untuk topik yang seterusnya. Di mana informan 1 menyatakan ia tidak membosankan kerana melibatkan aktiviti berkumpulan, manakala informan 6 menyatakan bahawa teknik ini nampak lebih ringkas tidak banyak teks. Petikan adalah seperti berikut;

- "*Ya..sebab ia tidak membosankan dan melibatkan kumpulan..*" (TBI-1, 08/05/2019)
- "*Ya.*" (TBI-2, 08/05/2019)
- "*Teknik ini, mungkin boleh la, sebab dia macam, dia kasi ringkas nda banyak teks.*" (TBI-3, 08/05/2019)
- "*Boleh.*" (TBI-4, 08/05/2019)
- "*Ya*" (TBI-5, 08/05/2019)
- "*Boleh.*" (TBI-6, 08/05/2019)

Mewujudkan Kerjasama Dengan Rakan

Temu bual diteruskan untuk mendapatkan maklum balas daripada informan sama ada teknik *true match* ini dapat membantu mewujudkan sikap kerjasama dengan rakan sekumpulan.

Pada kitaran kedua, informan 1 menyatakan dengan adanya kerjasama, boleh membantu mengingatkan urutan peristiwa. Informan 2 pula menyatakan boleh bekerjasama dengan rakan untuk memadankan kad.

Begitu juga dengan informan 3 yang menyatakan bahawa mereka saling membahagi tugas untuk memadankan kad mengikut urutan yang betul, informan 4 berpendapat kerjasama penting dalam melaksanakan aktiviti ini, informan 5 juga menyatakan kerjasama dapat memudahkan pelaksanaan aktiviti tersebut dan informan 6 menyatakan bahawa mereka saling bantu membantu menyusun kad mengikut urutan peristiwa yang betul.

- "*Ya, sangat bekerjasama memadankan kad ini, dapat mengingatkan urutan dengan peristiwa yang telah dibuat sebentar tadi.*" (TBI-1, 08/05/2019)
- "*Boleh, sebab kerjasama dengan rakan-rakan dapat memadankan kad.*" (TBI-2, 08/05/2019)
- "*Betul, tadi kami saling membagi tugas untuk kami memadankan mengikut urutan yang betul.*" (TBI-3, 08/05/2019)
- "*Boleh juga, sebab dengan aktiviti ini kami perlu ada kerjasama, kalau tanpa ada kerjasama mana dapat buat aktiviti ini.*" (TBI-4, 08/05/2019)
- "*Ya, sebab jika bekerjasama ia akan memudahkan untuk menyiapkan kerja tersebut.*" (TBI-5, 08/05/2019)

"Ya. Sebab saling membantu antara satu sama lain untuk mencari jawapan menyusun peristiwa-peristiwa berikut."

(TBI-6, 08/05/2019)

Dokumen sokongan telah disediakan sebanyak tiga set yang berlainan untuk setiap kitaran. Sebelum pelaksanaan teknik *true match* setiap informan dikehendaki menjawab kesemua tiga set kitaran untuk mendapatkan maklumat awal terhadap tahap pencapaian mereka sebelum menggunakan teknik *true match* iaitu pada kitaran pertama di mana pengkaji menggunakan kaedah tradisional terlebih dahulu untuk mengajar.

Sebelum teknik *true match* digunakan dalam PdPC pengkaji memberi ujian lembaran pengamatan pada kitaran pertama yang mengandungi semua soalan bahagian 1, 2 dan 3. Berdasarkan hasil dapatan, informan 1 mendapat 14 daripada 57 markah. Informan 2 hanya berjaya mendapat 9 daripada 57 markah. Informan 3 juga hanya mendapat 9 daripada 57 markah. Informan 4 berjaya mendapat 18 daripada 57 markah. Informan 5 pula mendapat 15 daripada 57 markah, manakala informan 6 berjaya mendapat 20 daripada 57 markah. Dapatan ini menunjukkan bahawa kesemua informan tidak dapat menjawab kesemua soalan lembaran pengamatan. Ini menjelaskan bahawa informan-informan ini menghadapi masalah untuk menguasai topik peristiwa penentangan pemimpin tempatan menentang British dengan baik.

Informan 2 dan 3 mendapat markah yang paling rendah. Ini dapat dibuktikan melalui pemerhatian pengkaji terhadap informan yang mendapati kedua-dua informan ini kurang memberikan tumpuan terhadap proses PdPC dan tidak berinteraksi dengan pengkaji secara langsung. Petikan adalah seperti;

"Informan ini bersifat agak pendiam, mudah terganggu oleh keadaan persekitaran, misalnya sering melihat ke luar jendela."

(BPI-2, 24/04/2019)

"Informan ini kurang memberikan tumpuan terhadap proses PdPC, tidak membuka buku teks di muka surat yang tepat dan tiada interaksi dua hala dengan pengkaji."

(BPI-3, 24/04/2019)

Informan 6 pula mendapat skor paling tinggi walaupun dapatan temu bual dengan informan mendapati bahawa informan ini menganggap topik ini susah namun daripada pemerhatian pengkaji mendapati informan 6 ini seorang yang aktif dan memberi respon pantas ketika ditanya. Informan 5 juga melalui temu bual didapati menganggap topik ini susah dan berdasarkan pemerhatian, walaupun informan ini melibatkan diri dan memberi kerjasama namun adakalanya bercerita dengan rakan disebelah tetapi melalui dapatan analisis dokumen informan 5 mencatatkan markah yang ketiga tertinggi iaitu 15 markah. petikan adalah seperti;

"Informan ini juga merupakan seorang yang aktif dan salah seorang yang memberi respon dengan cepat ketika ditanya. Ada interaksi dua hala dengan pengkaji."

(BPI-6, 24/04/2019)

"Informan ini dilihat memberi kerjasama dan melibatkan diri dalam proses PdPC. Memberi respon ketika di tanya. Namun adakalanya yang sama bercerita dengan rakan di sebelah."

(BPI-5, 24/04/2019)

Begitu juga dengan informan 4, yang mendapat 18 markah walaupun masih dalam kategori markah yang rendah namun, dalam kalangan mereka informan ini mendapat tempat kedua markah tertinggi di belakang informan 6. Informan ini melalui pemerhatian seorang yang aktif dan cekap.

"Informan ini dilihat sangat aktif dan mempunyai suara yang lantang. Memberi respon yang cepat dan betul ketika ditanya dan memberi kerjasama yang baik sepanjang proses PdPC."

(BPI-4,24/04/2019)

Jadual 4.2: Analisis Dokumen Sokongan Sebelum Teknik *True match*

PENILAIAN INFORMAN	SEBELUM TEKNIK <i>TRUE MATCH</i>			JUMLAH	CATATAN
	B1	B2	B3	B1+B2+B3	Ya/Tidak
1	10/19	4/19	0/19	14/57	Tidak
2	6/19	3/19	0/19	9/57	Tidak
3	5/19	4/19	0/19	9/57	Tidak
4	9/19	6/19	3/19	18/57	Tidak
5	10/19	4/19	1/19	15/57	Tidak
6	13/19	7/19	0/19	20/57	Tidak

Berdasarkan analisis dokumen sokongan sebelum teknik *true match* dapat dilihat bahawa kesemua informan ini adalah pada tahap sederhana dan lemah. Hal ini dapat dibuktikan melalui dapatan analisis yang mendapati pada bahagian ketiga, seramai empat orang responden mendapat 0 markah pada bahagian ini. Keadaan ini menunjukkan, mereka menghadapi masalah dalam menguasai topik peristiwa penentangan pemimpin tempatan menentang British.

Antara faktor utama yang menjadi penyumbang adalah penggunaan kaedah pengajaran yang tidak sesuai mengikut tahap mereka. Hal ini kerana analisis dapatan ini diperolehi setelah pelajar diajar menggunakan kaedah tradisional.

Jadual 4.3: Analisis Dokumen Sokongan Selepas Penggunaan Teknik *True match*

PENILAIAN INFORMAN	SELEPAS TEKNIK <i>TRUE MATCH</i>			CATATAN
	B1	B2	B3	Ya/Tidak
1	19/19	17/19	18/19	Ya
2	19/19	16/19	18/19	Ya
3	18/19	15/19	15/19	Ya
4	19/19	17/19	16/19	Ya
5	19/19	17/19	18/19	Ya
6	19/19	16/19	19/19	Ya

Selepas pelaksanaan teknik *true match* pada kitaran kedua pengkaji memberi lembaran pengamatan untuk dijawab oleh kesemua informan, berdasarkan analisis dokumen, informan 1, 2, 4, 5 dan 6 mendapat 19 markah iaitu markah penuh, manakala informan 3 mendapat 18 markah. Lembaran pengamatan bahagian 1 pada kitaran kedua ini mengandungi soalan berkaitan semangat nasionalisme dan peristiwa penentangan di Nanning dan Sarawak. Jika dibandingkan dengan markah pada kitaran pertama, terdapat peningkatan yang ketara selepas menggunakan teknik *true match* ini. Dapatan analisis dokumen ini disokong dengan pemerhatian yang dijalankan pada sesi PdPC tersebut. Pada hemat pemerhatian pengkaji, kesemua informan menunjukkan sikap positif dan keterujaan untuk memulakan aktiviti PdPC menggunakan teknik *true match* yang belum digunakan sebelum ini. Walaupun terdapat informan yang adakalanya bercerita dengan rakan disebelah dan perlu bimbingan rakan namun tugas mereka tetap dapat dilaksanakan mengikut masa yang ditetapkan.

"Melalui pemerhatian pada hari ini, informan menunjukkan minat dalam proses pembelajaran apabila teknik true match diperkenalkan."

(BPI-1, 08/05/2019)

"Informan ini juga menumpukan perhatian pada proses PdPC menggunakan teknik true match dan terlibat secara aktif dalam proses PdPC."

(BPI-2, 08/05/2019)

"Kali ini, informan memberikan tumpuan kepada proses PdPC dan melibatkan diri secara langsung dalam aktiviti. Namun begitu, informan perlu dibimbing oleh rakan sekumpulan kerana mudah terganggu oleh persekitaran."

(BPI-3, 08/05/2019)

"Informan ini seorang yang aktif dan memberi respon yang positif terhadap penggunaan teknik true match. Informan ini juga memberi kerjasama yang baik dengan rakan sekumpulan walaupun ada masa tertentu bercerita dengan rakan disebelah."

(BPI-4, 08/05/2019)

"Informan ini juga menumpukan perhatian terhadap penerangan pengkaji mengenai teknik true match. Semasa melaksanakan aktiviti, informan ini dilihat membantu rakan yang lain untuk menyelesaikan tugas."

(BPI-5, 08/05/2019)

"Informan ini juga menunjukkan sikap yang positif sewaktu pelaksanaan teknik true match. Aktif dalam memberi kerjasama dengan merujuk kepada nota dan buku teks."

(BPI-6, 08/05/2019)

Pada kitaran ketiga, lembaran pengamatan bahagian 2 perlu dijawab yang mengandungi soalan berkaitan peristiwa penentangan di Sabah, Perak dan Negeri Sembilan. Berdasarkan analisis dokumen sokongan, markah kesemua informan juga meningkat jika dibandingkan dengan markah pada kitaran pertama. Informan 1, 4 dan 5 mendapat 17 markah, informan 2 dan 6 mendapat 16 markah dan informan 3 mendapat 15 markah. tiada seorang informan pun yang mendapat markah penuh seperti lembaran pengamatan bahagian 1, namun peningkatan markah ini adalah pada kadar yang baik yang menunjukkan mereka boleh menguasai sesi PdPC pada masa itu. Hal ini disokong dengan pemerhatian yang dilakukan pada hari tersebut di mana kesemua informan masih bersemangat untuk menggunakan teknik *true match*, fokus dan bersungguh-sungguh mencari jawapan walaupun terdapat informan yang pada awalnya bercerita dan ada juga yang agak lambat memadamkan kad yang perlu dibimbing oleh rakan sekumpulan yang lain.

"Informan ini menunjukkan sikap yang positif kerana tidak sabar memulakan tugas dan menunjukkan usaha dalam mencari jawapan yang betul."

(BPI-1, 15/05/2019)

"Informan ini menunjukkan mood yang baik sepanjang pelaksanaan teknik true match. Masih melibatkan diri dalam memadamkan kad walaupun agak lambat."

(BPI-2, 15/05/2019)

"Informan ini walaupun seorang yang pendiam namun dilihat bersemangat melaksanakan aktiviti dengan menjadi ketua kumpulan."

(BPI-3, 15/05/2019)

"Informan ini pada awalnya bercerita, namun setelah melaksanakan aktiviti boleh lihat kesungguhan menyiapkannya dengan baik."

(BPI-4, 15/05/2019)

"Informan ini juga menunjukkan reaksi yang menggalakkan pada hari ini. Informan berusaha membantu dan memberi sokongan dengan rakan sekumpulan untuk menyiapkan tugas setelah kumpulan pertama terlebih dahulu menyiapkan tugas."

(BPI-5, 15/05/2019)

"Informan ini seorang yang positif, fokus menyiapkan tugas dan menggalakkan rakan sekumpulan untuk menyiapkan tugas dengan lebih cepat."

(BPI-6, 15/05/2019)

Analisis dokumen sokongan bahagian 3 pada kitaran keempat juga menunjukkan peningkatan yang markah yang positif. Lembaran pengamatan pada kali ini mengandungi soalan berkaitan dengan peristiwa penentangan di Pahang, Kelantan dan Terengganu. Informan 6 mendapat markah penuh iaitu 19, informan 1, 2 dan 5 mendapat 18 markah, informan 4 mendapat 16 markah dan informan 3 mendapat 15 markah. kesemua informan menunjukkan peningkatan selepas menggunakan teknik *true match* jika dibandingkan pada dapatan kitaran pertama.

Dapatan analisis dokumen sokongan ini juga disokong oleh pemerhatian yang dilakukan ke atas informan. Melalui pemerhatian yang dijalankan pada sesi PdPC kali keempat ini mendapati kesemua informan sudah terbiasa menggunakan teknik *true match*, informan 4 sering bertanya bila aktiviti akan dimulakan, informan 3 pula masih membuat sedikit kesilapan namun dapat diperbaiki dengan teguran rakan sekumpulan.

"Informan ini memberi kerjasama yang baik dalam kumpulan, walaupun terdapat kesilapan dalam memadankan kad namun setelah ditegur, namun tetap menunjukkan semangat yang positif."

(BPI-3, 22/05/2019)

*"Informan ini tidak sabar untuk memulakan tugas kerana sering bertanya bila aktiviti akan dimulakan. Dilihat sudah mahir melaksanakan teknik *true match*."*

(BPI-4, 22/05/2019)

PERBINCANGAN DAN IMPLIKASI KAJIAN

Melalui keputusan kajian yang telah diperolehi, pengkaji mendapati bahawa objektif kajian telah tercapai apabila penggunaan strategi pembelajaran aktif teknik *true match* dapat membantu kefahaman dan meningkatkan penguasaan pelajar terhadap topik peristiwa penentangan pemimpin tempatan menentang British. Hal ini dapat dilihat melalui dapatan temu bual, pemerhatian dan juga analisis dokumen sokongan yang telah dilaksanakan. Malahan kesemua informan menunjukkan reaksi yang positif terhadap topik ini selepas menggunakan teknik *true match*. Hasil kajian menunjukkan pelajar yang menghadapi masalah dalam mata pelajaran sejarah dan menganggap mata pelajaran ini susah disebabkan kandungan isi dan fakta sejarah yang padat. Keadaan ini menunjukkan bahawa betapa pentingnya kaedah pengajaran guru di dalam bilik darjah yang akan memberi kesan terhadap fizikal dan emosi pelajar. Secara amnya, kaedah pengajaran yang tidak sistematik akan menyebabkan pelajar menjadi bosan dan mempunyai tanggapan negatif terhadap mata pelajaran sejarah dan akhirnya membawa kepada kesalahfahaman terhadap mata pelajaran sejarah. Seterusnya, pelajar akan menzahirkan sikap mereka dengan tidak menumpukan perhatian dan pencapaian yang rendah dalam penilaian ujian dan peperiksaan. Walhal mata pelajaran sejarah ini seharusnya perlu difahami dengan baik bukan sekadar dihafal kerana isi kandungan fakta itu adalah realiti yang berlaku. Boleh dikatakan bahawa sejarah itu ibarat guru kepada manusia kerana apa yang difahami dan diperolehi daripadanya perlu dijadikan iktibar, tanpa sejarah manusia seperti kapal tanpa nakhoda yang kehilangan arah di tengah lautan (Mohd Faidz Mohd Zain, Jamaie Hamil, Mohd Rizal Moh Yaakob dan Mohamad Rodzi Abd Razak, 2011).

Isu kaedah pengajaran sejarah tidak pernah luput dibincangkan dan dikaji agar dapat diperbaiki dari semasa ke semasa. Guru menjadi individu yang memainkan peranan penting sebagai tunjang utama bilik darjah dan agen pelaksana yang penting kepada segala perancangan yang dibina oleh pihak penggubal kurikulum. Oleh hal yang demikian, guru perlu sentiasa tampil dengan strategi, kaedah pengajaran, kemahiran yang terkini dan ilmu yang padu bagi melaksanakan tanggungjawab ini (Ab Halim Tamuri dan Siti Muhibah Haji Nor, 2009). Dalam konteks pendidikan Sejarah aspek yang perlu diambil kira adalah pendedahan kepada kemahiran berfikir kritis, pemikiran analitikal dan pemikiran reflektif pelajar (Abd Rahim, 1999) yakni mendorong pelajar untuk berimajinasi dan menjadi kreatif. Oleh itu,

kaedah pengajaran secara tradisional adalah kurang sesuai untuk digunakan dalam usaha memupuk kemahiran-kemahiran tersebut. Penekanan perlu diberikan terhadap kaedah pengajaran yang berpusatkan pelajar. Justeru itu, strategi pembelajaran aktif teknik *true match* amat sesuai untuk digunakan di dalam bilik darjah kerana pelajar akan melibatkan diri mereka secara keseluruhan dan ini secara tidak langsung dapat melatih kesemua domain kognitif, psikomotor dan afektif apabila mereka berfikir, berkomunikasi dan membuat keputusan.

Ini disokong oleh dapatan kajian tentang penggunaan strategi pembelajaran aktif dalam topik peristiwa penentangan pemimpin tempatan menentang British yang menunjukkan respon positif di mana kesemua informan menyatakan bahawa teknik ini sesuai dan mudah untuk diaplikasikan. Informan 2 menyatakan pandangannya bahawa teknik ini dapat membantu menjawab soalan kertas dua dalam penilaian mata pelajaran sejarah. Ini dapat dilihat melalui analisis dokumen sokongan yang menunjukkan peningkatan markah dalam menjawab soalan subjektif bahagian 1, 2 dan 3. Sememangnya kertas dua sejarah yang mengandungi soalan subjektif sering menjadi masalah bagi pelajar yang lemah dalam memahami dan menguasai mata pelajaran sejarah.

Strategi pembelajaran aktif teknik *true match* sejajar dengan kaedah pengajaran abad ke-21 yang diuar-uarkan. Kaedah pengajaran abad ke-21 amat sesuai dengan konteks pelajar pada ketika ini. Umumnya pembelajaran abad ke-21 menekankan kepada aspek kemahiran komunikasi, kolaboratif, pemikiran kritis, kreativiti dan nilai murni dan etika (KPM, PAK21). Oleh hal yang demikian strategi pembelajaran aktif teknik *true match* adalah relevan untuk digunakan oleh guru-guru sejarah kerana fungsinya yang boleh meningkatkan potensi pelajar menjadi individu yang bertanggungjawab dan berdikari. Melalui dapatan kajian, terdapat juga informan yang menyatakan penggunaan teknik *true match* ini lebih mudah jika dibandingkan dengan penggunaan buku teks semata-mata kerana huraian fakta menjadi lebih mudah setelah diringkaskan menjadi isi-isi penting, bermaksud melalui teknik *true match* teks-teks yang panjang dipisahkan dan diringkaskan agar mudah untuk dipadankan mengikut urutan yang betul. Dengan bersandarkan kepada dapatan tersebut, penggunaan buku teks secara tunggal dalam PdPC tidak berupaya membantu mencapai objektif pembelajaran dengan lebih berkesan.

Hal ini sejajar dengan pandangan Rohani Arbaa *et., al* (2010) yang menyarankan agar guru tampil menjadi seorang yang lebih kreatif dan berinovasi untuk memastikan pengajaran menjadi lebih efektif dan menarik supaya dapat merangsang minat dan motivasi pelajar untuk belajar. Pelajar akan menghargai guru yang memberi peluang kepada mereka untuk bertanggungjawab terhadap pembelajaran mereka sendiri kerana pelajar adalah watak utama dalam bilik darjah yang dibimbing oleh guru.

Dapatan kajian terhadap penggunaan strategi pembelajaran aktif teknik *true match* dalam membantu mengingat isi dan fakta sejarah juga mendapat reaksi yang positif dalam kalangan informan kajian ini. Menurut mereka strategi ini dapat membantu mereka mengingat urutan fakta sejarah kerana mereka memadamkan kad mengikut urutan yang betul. Malah

informan 4 menyatakan teknik ini dapat membantunya mengingat fakta kerana mereka terlibat dalam melakukan aktiviti dan menggalakkan otaknya untuk bekerja. Maka dengan ini, dapat disimpulkan bahawa keterlibatan pelajar secara langsung dalam proses PdPC menggunakan teknik *true match* memberi dampak positif terhadap keupayaan mereka menyimpan dan mengingat maklumat dengan lebih mudah. Perkara ini selaras dengan rasional teori konstruktivisme di mana pelajar yang terlibat secara aktif dalam proses PdPC dapat membina ilmu pengetahuan mereka sendiri dengan lebih bermakna berdasarkan pengalaman sendiri dengan persekitaran dan proses aktif yang berlaku dalam otak (Appleton, 1997). Pelajar membina ilmu pengetahuan mereka sendiri dengan menguji pendekatan dan idea yang diberikan oleh guru dengan bersandarkan pengetahuan sedia ada mereka dan mengaplikasikannya dalam situasi yang baharu dengan mengintegrasikan pengetahuan baharu dengan pengetahuan sedia ada. Justeru itu, keadaan ini dapat membantu pelajar untuk mengingat fakta sejarah yang telah mereka pelajari (Mustapha, 2000).

Melalui dapatan kajian, kesemua informan bersetuju bahawa teknik *true match* berupaya mewujudkan kerjasama dengan rakan. Mereka telah memberi maklum balas yang positif bahawa dengan adanya kerjasama dengan rakan, mereka dapat memadamkan kad dengan mudah, mendorong sikap saling bantu membantu di samping membantu mereka untuk memahami urutan peristiwa yang telah dipelajari hasil perbincangan bersama dengan rakan. Dengan adanya kerjasama kumpulan, peluang untuk memenuhi keperluan pelajar untuk bersosial dapat dipenuhi di mana selepas selesai aktiviti berkumpulan, pelajar akan merasakan perlunya berinteraksi tentang pengalaman pembelajaran yang dilalui mereka kepada individu yang lain, keadaan ini akan membawa kepada perkembangan hubungan sesama rakan yang lain di dalam bilik darjah (Harmin, 1994). Malahan juga kerjasama kumpulan yang aktif akan menjadikan proses pembelajaran menjadi lebih berkesan (Silberman, 1996). Justeru itu, dengan bersandarkan dapatan kajian, pelajar yang berinteraksi dengan rakan dan guru dalam proses PdPC lebih cenderung untuk menguasai topik pembelajaran dengan lebih baik kerana wujud kerjasama antara pelajar, menjadikan pelajar lebih aktif dan dapat mengasah kemahiran berkomunikasi yang penting dalam membina individu yang cekap dan berani.

Di samping itu, melalui dapatan analisis dokumen sokongan, pencapaian kesemua informan kajian telah meningkat jika dibandingkan dengan pencapaian sebelum pelaksanaan teknik *true match*. Penilaian dilaksanakan sebanyak tiga kali yang merangkumi bahagian 1 untuk kitaran pertama, bahagian 2 untuk kitaran kedua dan bahagian tiga untuk kitaran 3. Kesemua informan menunjukkan peningkatan pencapaian yang baik walaupun terdapat informan yang tidak memperolehi markah penuh untuk setiap bahagian. Namun, perkara ini jelas menunjukkan terdapat perubahan dan peningkatan pencapaian pelajar setelah menggunakan teknik *true match*. Melalui pemerhatian, pengkaji melihat bahawa terdapat peningkatan motivasi dalam kalangan informan di mana mereka menunjukkan minat, melibatkan diri dan membantu rakan yang lemah dalam proses PdPC melaksanakan teknik *true match*. Kesungguhan guru dalam mewujudkan proses PdPC yang berkesan dan bermakna mampu mengubah sikap pelajar untuk menjadi lebih positif dan berminat terhadap pengajaran guru. Kenyataan ini disokong oleh Muhammad Abdillah dan Haleefa (2011) yang mengakui bahawa

minat merupakan salah satu faktor penting dalam menentukan kejayaan seseorang individu dalam apa jua bidang yang diceburinya. Motivasi juga adalah perangsang yang mampu membangkitkan dan mengekalkan minat seseorang individu ke arah mencapai matlamat yang diinginkan antaranya, mengubah sikap dan tingkah laku (Mok, 2007). Justeru itu, strategi pembelajaran aktif teknik *true match* berupaya meningkatkan motivasi pelajar untuk belajar kerana ia merupakan satu kaedah baharu yang mampu mendorong pelajar untuk belajar dan melibatkan diri secara aktif dalam proses PdPC.

Implikasi Terhadap Teori Pembelajaran Konstruktivisme

Kajian ini dijalankan bersandarkan teori pembelajaran konstruktivisme. Menurut gagasan idea Glasersfeld (1995) individu membentuk ilmu pengetahuan mereka dengan mengambil inisiatif sendiri di mana tujuan ilmu pengetahuan dibentuk adalah untuk mengubah suai diri ke dalam persekitaran sekitarnya dan proses penyerapan ilmu pengetahuan adalah melalui rasionalisasi pengalaman individu tersebut. Dalam pengamalan konstruktivisme juga, pelajar perlu melibatkan diri secara aktif dalam proses PdPC dan guru berperanan sebagai pembimbing untuk menggalakan pelajar mencari makna daripada apa yang telah didedahkan kepadanya. Dapatan kajian ini menyokong konsep tersebut di mana pelajar terlibat secara aktif dalam melaksanakan teknik *true match* untuk membantu mereka menguasai topik peristiwa penentangan pemimpin tempatan.

Implikasi Terhadap Guru dan Pelajar

Penggunaan strategi pembelajaran aktif teknik *true match* amat sesuai digunakan oleh guru untuk membantu pelajar yang sederhana dan lemah dalam menguasai mata pelajaran sejarah. Guru-guru perlu menyesuaikan kaedah pengajaran mengikut perkembangan semasa supaya tidak menjadi guru yang terpinggir dan kaku (Anuar Ahmad dan Nelson Jingga, 2015). Selain itu, guru perlu menjadi lebih kompeten dengan memastikan kaedah pengajaran yang digunakan adalah sesuai mengikut tahap kecerdasan pelajar agar proses pembelajaran lebih berkesan dan memberi dapat mencapai objektif pembelajaran. Malah tidak sekadar itu, kaedah dan teknik pengajaran yang diaplikasikan hendaklah berinovasi dan kreatif sehingga mampu menarik minat pelajar agar dapat menepis persepsi bahawa mata pelajaran sejarah membosankan. Justeru itu, teknik *true match* merupakan satu kaedah yang boleh digunakan oleh guru dalam memperbaiki kaedah pengajaran sedia ada.

Dalam konteks pelajar, teknik *true match* ini merupakan kaedah baharu yang sesuai untuk diaplikasikan dalam mata pelajaran sejarah kerana dilihat mampu memberi kesan terhadap pencapaian pelajar berdasarkan dapatan kajian yang membuktikan terdapatnya peningkatan dalam pencapaian pelajar. Dapatan kajian juga disokong melalui pemerhatian yang menunjukkan bahawa pelajar menunjukkan minat dalam PdPC dengan menumpukan perhatian sepenuhnya ketika melaksanakan aktiviti ini. Perubahan ini jelas dapat dilihat kerana sebelum pelaksanaan teknik *true match* pelajar lebih mudah bercerita dengan rakan kerana hanya pengkaji yang menguasai kelas, manakala pelajar hanya menjadi pendengar yang pasif. Malah terdapat juga pelajar yang bercerita dan mengkhayal ketika pengkaji mula mengajar. Oleh hal yang demikian, teknik *true match* dilihat lebih memfokuskan kepada peranan pelajar

di dalam bilik darjah dan dapat membantu memperbaiki tingkah laku pelajar dan meningkatkan motivasi pelajar untuk mempelajari sejarah.

Implikasi Terhadap Pihak Sekolah

Pihak sekolah merupakan pihak yang bertanggungjawab dalam memastikan guru mampu melaksanakan pengajaran yang efektif di samping memastikan guru dapat mengesan pelajar yang lemah dalam mata pelajaran sejarah.

Bukan setakat itu sahaja, pihak sekolah juga perlu mendorong guru-guru sejarah untuk berusaha membincangkan, merancang dan melaksanakan kaedah pengajaran sejarah seperti strategi teknik *true match* untuk membantu pelajar yang lemah menguasai mata pelajaran sejarah. Penggunaan teknik *true match* ini merupakan satu idea pembelajaran abad ke-21 yang boleh digunakan oleh guru.

Cadangan Kajian akan Datang

Berdasarkan kaedah yang telah dilaksanakan serta dapatan yang diperolehi, pengkaji telah melihat kekuatan dan kelemahan kajian ini. Berikut merupakan antara cadangan yang boleh digunakan bagi melengkapkan keberkesanan kajian pada masa akan datang terutama berkaitan dengan kaedah pembelajaran abad ke-21.

Dalam kajian ini, pengkaji menggunakan teknik *true match* dalam PdPC dalam tempoh yang singkat iaitu sebanyak tiga kali kitaran sahaja. Kajian akan menjadi lebih bermakna dan menarik sekiranya peserta menggunakan strategi pembelajaran aktif teknik *true match* dalam tempoh masa yang lebih lama. Tempoh masa yang lebih lama untuk menjalankan kajian akan memperlihatkan kesan yang lebih mendalam.

Begitu juga dengan bilangan peserta kajian, walaupun dapatan kajian secara kualitatif ini dapat menyediakan maklumat yang kaya dan terperinci, namun peserta kajian masih terhad dan tidak dapat digeneralisasikan kepada populasi yang lebih besar. Justeru itu, kajian pada masa hadapan boleh dilaksanakan dalam bentuk kuantitatif dan melibatkan populasi kajian yang lebih besar.

Kajian pada masa hadapan juga perlu melihat dari sudut pandang yang lebih luas berkaitan dengan teknik *true match*. Sebagai contoh, dalam kajian ini teknik *true match* digunakan untuk melihat tahap penguasaan dan pemahaman pelajar terhadap topik perjuangan pemimpin tempatan. Oleh hal yang demikian, kajian pada masa hadapan perlu melihat kepada topik yang lebih luas daripada huraian sukatan pelajaran mata pelajaran sejarah untuk melihat keberkesanannya dalam topik-topik yang lain. Di samping itu, kajian juga perlu dilakukan secara mendalam ke atas kesan selain daripada penguasaan pelajar. Misalnya seperti sikap pelajar ataupun guru-guru sejarah. Kajian pada masa hadapan juga akan lebih bermakna jika teknik *true match* ini dapat diinovasikan oleh pengkaji yang lain. Walaupun kaedah pengajaran abad ke-21 telah banyak dikaji, namun kaedah-kaedah yang baharu dan berinovasi perlu dilaksanakan kerana perkembangan dan perubahan zaman

yang memerlukan dapatan yang lebih terkini dan sesuai untuk digunakan pada zaman digital ini. Keadaan ini sekaligus dapat menyumbang kepada kualiti pendidikan negara yang memberi impak besar kepada generasi masa hadapan.

RUMUSAN

Penggunaan strategi pembelajaran aktif teknik *true match* mampu meningkatkan penguasaan pelajar dalam PdPC sejarah. Pengkaji berharap agar artikel ini mampu memberi pengetahuan tentang penggunaan strategi pembelajaran aktif teknik *true match* dalam mata pelajaran sejarah supaya guru-guru sejarah mendapat pengetahuan yang lebih meluas terhadap kaedah pengajaran abad ke-21.

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