PHYSICAL ACTIVITY, CARDIORESPIRATORY ENDURANCE AND BODY WEIGHT STATUS ACCORDING TO SOCIOECONOMIC STATUS OF FAMILY AMONG SCHOOL CHILDREN IN TELUK INTAN, PERAK

NURUL DIYANA BINTI SANUDDIN

THESIS SUBMITTED IN FULLFILLMEMT OF REQUIREMENT FOR DEGREE MASTER OF EDUCATION IN SPORTS SCIENCE (MASTER BY RESEARCH)

FACULTY SPORTS SCIENCE AND COACHING
UNIVERSITI PENDIDIKAN SULTAN IDRIS
2015

ABSTRACT

This study aims to determine if the income level of family has any affect on the health of children, especially their fitness level (physical activity), cardiorespiratory endurance and level of obesity. A total of 420 children aged 10 to 12 years old participated in this study. This study was conducted at selected primary schools in Teluk Intan, Perak. The height and weight (antropometric measurement) of each student were recorded. The students were also required to complete a 1,600 meters run or walk for cardiorespiratory endurance test, body fat percentage test and answered children's leisure activities study survey (CLASS). One-way analysis of variance (ANOVA) analyze showed, a significant difference in physical activity among children from different income level of a family. Besides, it showed no significant difference in maximal volume oxygen consumption (VO_2max), body mass index, and skinfold thickness among children from different income level of a family. As a conclusion, in order to increase participation in physical activity among school children, the parents and teachers need to encourage school children to get involved in physical activity, such as parents do some exercise with their children rather than watching television. Besides, the teachers need to make their physical education classes more enjoyable to attract the children participation and promote students wellness.

AKTIVITI FIZIKAL, TAHAP KARDIORESPIRATORI DAN STATUS BERAT BADAN BERDASARKAN STATUS SOSIOEKONOMI KELUARGA DALAM KALANGAN KANAK-KANAK SEKOLAH DI TELUK INTAN, PERAK

ABSTRAK

Kajian ini bertujuan untuk menentukan sama ada tahap pendapatan keluarga mempunyai kesan kepada tahap kesihatan kanak-kanak, terutamanya tahap kecergasan (aktiviti fizikal), daya tahan kardiorespiratori dan tahap obesiti. Seramai 420 kanak-kanak berumur 10 hingga 12 tahun mengambil bahagian dalam kajian ini, yang dijalankan di sekolah-sekolah rendah terpilih di sekitar Teluk Intan, Perak. Ketinggian dan berat badan (komposisi badan) setiap pelajar telah direkodkan. Pelajar-pelajar juga dikehendaki untuk melengkapkan 1,600 meter berlari atau berjalan untuk ujian daya tahan kardiorespiratori, ujian ketebalan lemak dan menjawab soal selidik yang telah disediakan (CLASS). Analisis sehala varians (ANOVA) telah digunakan untuk menganalisis kajian ini. Dapatan kajian menunjukkan, perbezaan yang signifikan dalam aktiviti fizikal dalam kalangan kanak-kanak dari tahap pendapatan keluarga yang berbeza. Selain itu, ia tidak menunjukkan perbezaan yang signifikan dalam penggunaan oksigen secara maksimum (VO_2 max), indeks jisim badan, dan ketebalan lipatan kulit dalam kalangan kanak-kanak dari tahap pendapatan keluarga yang berbeza. Kesimpulannya, dalam usaha untuk meningkatkan penyertaan aktiviti fizikal dalam kalangan kanak-kanak, ibu bapa dan guru perlu memainkan peranan sebagai contoh ibu bapa melakukan aktiviti fizikal bersama anak mereka daripada menghabiskan masa menonton televisyen. Di samping itu, guru juga perlu membuatkan kelas pendidikan jasmani lebih menyeronokkan, untuk menarik minat kanak-kanak sekolah mengambil bahagian dalam aktiviti fizikal dan meningkatkan tahap kecergasan mereka.

CONTENTS

CHAPTER 5 DISCUSSION, CONCLUSION AND RECOMMENDATION

LIST OF TABLE

LIST OF FIGURE

CHAPTER 1

INTRODUCTION

1.1 Background of study

Malaysia is currently experiencing a rapid development process due to socio-economic development. It also impacts the demographic profile of the population. Socioeconomic status of family could contribute to the obesity issue and the effect on being physically active (Serena, Shamarina, & Mohd Nasir, 2011). This is because, the numbers of children become obese is increasing year by year. It has been reported in many Asian countries including Malaysia, that 1 out of 10 children aged 5 to 17 years old is overweight or obese (International Task Force, 2003).

Childhood obesity poses global public health threat and has risen to an alarming level throughout the world. There were many factors or reasons caused overweight in children for example eating patterns which was not healthy, inactivity (sedentary or physically not active),being inherited from the family or the factors combination (Balkish, *et al.*, 2013). Besides, the Third National Health and Morbidity Survey (IPH, 2008) reported that there were 5.4% of overweight children aged below 18 years old in Malaysia. The highest group was among children age ranged from 7-12 years old. Statistics prove that, those children were affected by their healthy lifestyle especially they were contented to entertainment rather than engage in physical activities.

Many Asian countries including Malaysia are dealing with overweight and obesity among school children. Ten years ago, a very rapid economic and industrial development in Malaysia has occurred. The living standards raised in many areas for developed countries. According to Moy, Gan, and Siti Zaleha (2004), Malaysian youngsters and school children aged 5 to 20 years old represent the 20% of the total population. Due to this large proportion, it was important to investigate how economic development affecting their lifestyle and health behaviours. For example, attitudes, social and physical activities, as well as food habits among school children were influenced by an exposure to mass media coupled with economic affluence (Moy, Gan & Siti Zaleha, 2004).

Lacking in physical activities among children, such as commitment in their school homework, wealth thing of their family status or chronically involved in computer games, excessive time spent on watching television, were among the factors contributed to obesity (Taveras, *et al.*, 2006). They are less concerned about health lifestyle or the requirement of physical fitness, environmental health, but they are more interested in the social health like personal appearances, not focus on physical or physiological need of health. Besides, family socioeconomic status may also affect their sedentary activities and the malnutrition of healthy diet (Taveras, *et al.*, 2006).

Serene and her friends (2011) reported that, the prevalence of overweight among primary school children in Malaysia faced an increase in overweight percentage in both gender with 6.03% for boys compared to previous percentage with 5.36%. The percentage of overweight among girls shows the increment from 4.68% to 12%. Another study conducted in Kuala Selangor showed that 21.8% of children aged 10-12 years were overweight according to Ghazali, and colleagues (2006). Likewise, other researcher also reported on the increasing of the percentage of overweight among children of primary school in Peninsular Malaysia in 2008 with 26.5% compared in 2002 with 20.7%. (Mohd Ismail, *et al.*, 2009). The increasing epidemic of overweight or obesity among school age-children is at worrying state. It is important to identify the potential socio-demographic factors associated with overweight and obesity among school children (Balkish, et al., 2013).

Since the times of revolution took place, it can be seen that there was a remarkable shift in lifestyle behavior. Automatic machines have been created and modern technologies helps in reducing the time spent on daily living and leisure time activities. Both children and adults become less active and having low physical activity levels due to the appearance of modern technology such as electronic devices and automation (Zimmerman, & Bell, 2010). It has been shown in local data that the satisfactory targeted level for physical fitness associated with health among students and adults were not yet been met. It created alarming situation due to the rate of mortality for both abroad and local as most problems were related with cardiovascular death (Tee, 2012).

The community nowadays watch television, video games and entertainment from computers have replaced outdoor activities as activities to occupy their free time. It has been mentioned in a media study recently that youth age 2 to 18 years old spend 5 to 29 minutes average in a day to use many different types of media (Sizer & Whitney, 2006). The escalating rate was partly from the contribution of more time spent on playing video games, using computer, and also watching the television. They are less concerned about healthy lifestyle or the requirement of physical fitness, but they are more interested in social health like personal appearances, and not focus on physical activity or physiological need of health (Sothern, 2004).

Other study have found that other factors were widely related with higher weight in children and adults such as socioeconomic status, environmental factors, dietary habits, and also insufficiently physical activity (Vanhalaa, *et al.*, 2009). The above issue on physical activity and parental contribution is also related to the increase number of childhood obesity. Physical activity may have a greater impact in preventing the prevalence of obesity among school children (Aires et al., 2010).

1.2 Problem Statements

Advancement of technology nowadays such as televisions, computers, and video games will affect physical activity among children. Understanding the factors or predictors which affecting the adolescents physical activity levels is needed to be studied in order to promote physically optimally. Socio-demographic and health-related factor were two broad ranged factors that could influence the level of physical activity and physical fitness (Dan, Mohd Nasir & Zalilah, 2011; Esmaeilzadeh, Kalantari & Nakhotin, 2013). Besides, the evidence for such socioeconomic status and physical activity is reportedly less consistent than for other health behaviours, which could be a consequence of the considerable problems associated with measuring this relationship (Gidlow, Johnston, Crone, Ellis & James, 2006).

It is important for an individual to have at least basic fitness knowledge to get the benefits out of adequate fitness. More children are getting fat and less fit caused them to face a great risk of health disease. The report from the Department of Health of Perak (2010), state that the higher number of death caused by diseases which were respiratory system, and the major cause of death among children was respiratory system. Heart disease is among the most widespread and costly health problems facing by our nation today, even though it is preventable. In order to reduce the risk of chronic disease, it was important to maintaining physical fitness at early age (Matton, 2006).

Health – related physical fitness is influenced by various other factors, such as body size, time spent performing the physical activity and family income (Aboshkair, Amri, Yee, & Samah, 2012). Besides, some determinants or influences on being overweight or obese include socioeconomic status. Income level may be the most frequently used socioeconomic status indicator in the health status. It still been debated on how socioeconomic status and obesity was related. There were considered lack of evidence as only limited study been done using large scale survey data in order to investigate relationships between childhood obesity and socioeconomic status (Wang, 2001).

The rapid economic growth in Malaysia nowadays has contributed to changes in diet and lifestyle community in Malaysia. Overall the increase in the level of socio economic family affects the health and physical activity of children in Malaysia. According to Pon Lai Wan and colleagues (2004), obesity was on a high rise in children,

increasing later risk for chronic condition such as diabetes, hypertension, stroke, heart disease and some types of cancers. Other than findings from previous studies on the influence of family and social-environmental on a child weight status, there was still lack of studies on related issues in Malaysia (Serena et al., 2011; Sobal & Stunkard, 1989).

In addition, Fatimah, and colleagues (2001) reported that the percentage of children with obesity who residing in Kuala Lumpur was 8.7%. The surrounding known as urban areas represents the most industrialized and economically and fast growing region with 100% urbanization compared to Kota Bahru with only 5.7% even though it was the city in the state of Kelantan. Referring to the study done by Tee et al., (2002), a total of 5,995 children age ranged from 7 to 10 years old who comes from all primary school around Kuala Lumpur stated it was a common feature to see that 9.7% among boys meanwhile 7.1% among girls were overweight which based on greater than 95th percentile of the BMI-for-age (WHO, 1995).

In Malaysia, in term of socioeconomic, physical activity, physical fitness (cardiorespiratory endurance) and the prevalence of obesity have reported that there are many children and adolescents who are physically inactive (Dan, Mohd Nasir & Zalilah, 2011; Soo, Wan Abdul Manan, Abdul Manaf & Lee, 2011; Serena, Shamarina & Mohd Nasir, 2011). However, there were still lacks of evidence regarding the relationship between these issue. Therefore, this study determines the influence of socioeconomic status of family to the physical activity level, physical fitness (cardiorespiratory endurance) level, and the prevalence of obesity among school children.

1.3 Significant of the study

The significant of this study was to identify the main factors that really contributed to increment number of obesity among Malaysian's children. The future finding could be useful for parent to design a better and healthier lifestyle routine. This study involved parents because it could help them to realize the dangerous situation that they going to face in the future regarding prevalence of obesity and physically inactive among children.

Children, will gain benefits from this study because they will be exposed to better lifestyle and will know either their body weight is ideal, overweight or obese. Researcher also would give some advice after the participants completely answered their questionnaire and while measuring the children's body mass index (BMI). This data can be used as references by school authorities, community leaders, and other researchers in planning healthy lifestyle program for the children.

This research hopes to create public awareness by giving valuable information regarding the importance of being physically active. The school environment is important for promoting health behaviours such as physical activity. By having the knowledge of the prevalence of obesity among children, teachers can redesign their goal setting for nutrition education, physical education classes and other school based activity in order to promote students wellness.

The result of this study is very important to children between ten to twelve years old to identify their body mass index (BMI) and fitness level of the cardio respiratory endurance. Active in physical activity contributes to a healthy lifestyle, preventing obesity and contribute to the social and wellness among children. All individual must take their responsibility including family, industry, and local community.

1.4 Research Question

There were three research question in this study. First, are there any differences in physical activity among children from differences socioeconomic statuses of family?

Second, are there any differences in cardiorespiratory endurance among children from upper, middle and lower income of family?

Third, are there any differences in the body weight status between upper income of family compared to children from lower income of family?

Lastly, are there any significant relationship between socioeconomic status with physical activity, cardiorespiratory endurance and body weight status among school children in Teluk Intan, Perak?

1.5 Objective

There were three objectives in this study. The initial stage of the study was to examine if there was any differences in levels of physical activity based on the income level of family among school children in Teluk Intan, Perak.

This study was also conducted to determine differences in level of cardio respiratory endurance among school children from different income level of family in Teluk Intan, Perak..

Third, the study was to investigate the differences in the prevalence of obesity among school children from different level of family income in Teluk Intan, Perak..

Lastly, the study was to identify the relationship between socioeconomic status with physical activity, cardiorespiratory endurance and body weight status among school children in Teluk Intan, Perak.

1.6 Hypothesis

Based on the problem statement, the hypotheses for this study are as follow:

1.6.1 H_O: There is no significant difference in physical activity level among children from different income level of family in Teluk Intan, Perak.

1.6.2 Ho: There is no significant difference in cardio-respiratory endurance (VO_2 max) among children from different income level of family in Teluk Intan, Perak.

1.6.3 Ho: There is no significant difference in body mass index (BMI) among children from different income level of family in Teluk Intan, Perak.

1.6.4 Ho: There is no significant difference in body fat percentage among children from different income level of family in Teluk Intan, Perak.

1.6.5 Ho: There is no correlation between socioeconomic status with physical activity, cardiorespiratory endurance and body weight status among school children in Teluk Intan, Perak.

1.7 Limitation

There were several limitations that occurred when this research was conducted where the study only covers selected school children in Teluk Intan, Perak.

There were 420 students who were voluntarily participated in this study from primary schools between the ages of ten to twelve years old. They were assumed to respond to the questionnaire honestly and without bias. Limitations of this study were also influenced by the environment, culture and diet. Energy intake was not considered in this study, resulting in an inability to examine the contribution of energy intake and energy expenditure to the weight status.

1.8 Operational definition

1.8.1 Socioeconomic Status (SES)

In this study socio economic status of family (income level) referred to Malaysian Economic Planning Unit Classification (2007). The income status for family from lower income of family not less than RM1500, middle income of family ranges between RM1500 until RM3500 and the upper income of family is more than RM3500.

1.8.2 Anthropometric

This study refers body composition as fat percentage and body mass index (BMI).Body fat percentage was measured by skinfolds thickness at various sites on the body, percent body fat can be calculated whether using two sites, three sites or seven sites but it depends on specific equation such as equations by Slaughter et al. (1988). Body mass (kg), stature (m) and on two sites which are triceps, and medial calf skinfold (mm) were measured. Mean while body mass index (BMI) was calculated by using standard calculation of kg/m^2 (by diving body weight (kg) by the meter (m) square of height). BMI standards are used to classify obesity and to assess disease risk (Hoffman, 2006). As for children and adolescents, height and body composition is continually changing, for children aged 5 to 19 years, it is recommended interpretation of Z – score for BMI for age from WHO 2007.

1.8.3 Obesity

The occurrence of excessiveness of unused fat in adipose tissues refers to obesity and can caused problems to health. The differences between obesity individual with one and another were not only considering the excess storage of fat but also the fat regional distribution in their body. Excess of fat in the abdominal area brought greater risk of disease to an individual (WHO 2000).The calculation of Body Mass Index (BMI) could be used to identify obesity in children. An

individual was considered as obese when the result of the calculation was in the range of 85th to 95th percentile (Byrd, 2007).

1.8.4 Physical Activity

The children leisure activities study survey (CLASS) was used in measuring the children's physical activity. The assessment of CLASS for the participant's physical activity was conducted in seven days in a row with different time (i.e., during school, after school, recess, weekend, etc) and places. The amount of time in minutes children spend in various physical activities, leisure time and activity at school were collected for a week (Telford, Salmon, Jolley, & Crawford, 2004; Wen, Ploeg, Kite, Cashmore, & Rissel, 2010).

1.8.5 Leisure Time

Children always engaged themselves into activities such as watching television or playing video games, where less physical movement in their free time and these leisure activities leads them to less participation in moderate and vigorous physical activity. The "obesogenic" environment was completed by giving the children the opportunity to consume high fat and calories food during this period of time. This environment leads to the development of overweight and the possibility of obesity (Yin, Cavnar, & Barbeau, 2004).