UNIVERSITI PUTRA MALAYSIA

BODY WEIGHT STATUS, EATING BEHAVIOR, PHYSICAL ACTIVITY LEVEL AND DEPRESSIVE SYMPTOMS AMONG ADOLESCENTS IN PUTRAJAYA

NURUL WAHIDAH BT ABD RASHID

BODY WEIGHT STATUS, EATING BEHAVIOR, PHYSICAL ACTIVITY LEVEL AND DEPRESSIVE SYMPTOMS AMONG ADOLESCENTS IN PUTRAJAYA

BY

NURUL WAHIDAH BT ABD RASHID

A project submitted as a partial fulfillment of the requirement for the degree of Bachelor of Science (Nutrition and Community Health) from the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

ACKNOWLEDGEMENT

I would like to grab this opportunity to express my gratitude to those who have involved directly or indirectly in order to ensure this final year project has accomplished.

Millions of thanks go to my course coordinator of the final year project, Dr. Geeta Appanah for the guidance that were given throughout the process. Besides that, I am really grateful to Dr. Zuriati Ibrahim for her assistance, supervision and guidance throughout the whole year of my final year. Her flexibilities in doing work has motivate me to work dynamically and work according to the flow easily.

I would like to acknowledge to Ministry of Education Malaysia, Department of Education Putrajaya (JPWP), principal, teachers and students of Sekolah Menengah Kebangsaan Putrajaya Presint 16(1). Thank you for giving me a chance and cooperation in conducting this study in the school location. Thank you very much for the support and commitments.

Last but not least, a grateful thank you to my families and friends. Thank you so much for giving me a lot of motivation, support, help and many more in completing this study. Thank you.

TABLE OF CONTENTS

List of Tables

List of Figures

ABSTRACT

BODY WEIGHT STATUS, EATING BEHAVIOR, PHYSICAL ACTIVITY LEVEL AND DEPRESSIVE SYMPTOMS AMONG ADOLESCENTS IN PUTRAJAYA

Nurul Wahidah Binti Abd Rashid

Common mental disorders in adults often initially emerge in childhood and adolescence. This cross sectional study was conducted to determine the associations between body weight status, eating behavior, and physical activity level with depressive symptoms among adolescents in SMK Putrajaya Presint 16(1). A set of self-administered questionnaire of Eating Behavior Questionnaire (EBQ), Physical Activity Questionnaire for Adolescents (PAQ-A) and Depression, Anxiety and Stress Scale (DASS-21) was used to measure eating behavior, physical activity level and depressive symptoms respectively. Height and weight were measured and Body Mass Index (BMI) was calculated. A total of 180 subjects, age ranged from 14 to 16 years old participated in this study. Majority of the subjects were Malays (96.7%) and there were equal distribution of gender among the subjects. The prevalence of depressive symptoms was 17.3%. Most (66.7%) of the subjects have normal BMI, with 27.2% were overweight and obese and only 6.1% were underweight. Majority of the subjects skipped meals 2-3 times per week (40.6%), had snacking between meals (91.1%), had meals with family (72.8%) and moderate level of physical activity (53.9%). Only 12.9% of the adolescents with depressive symptoms were never skipped meal as compared to adolescents without depressive symptoms which was about 42.3% (χ^2=10.043, p=0.007). Only 13.7% of the subjects with depressive symptoms had meal with family as compared to those without the depressive symptoms (χ^2=4.092, p=0.043). BMI was not significantly correlated with depressive symptoms (r=0.06, p=0.934). Breakfast consumption (r=-0.324, p=0.000) and physical activity level (r=-0.188, p=0.011) were inversely correlated with depressive symptoms. The findings suggest that breakfast consumption, skipping meal behavior, eating companion and physical activity level were associated with depressive symptoms among adolescents. Thus, multiple strategies that take into consideration these factors might offer great potential to reduce the depressive symptoms among adolescents.

ABSTRAK

STATUS BERAT BADAN, TINGKAHLAKU PEMAKANAN, TAHAP AKTIVITI FIZIKAL DAN TANDA-TANDA KEMURUNGAN DALAM KALANGAN REMAJA DI PUTRAJAYA

Nurul Wahidah Binti Abd Rashid

Kebiasaannya masalah mental dalam kalangan orang dewasa tercetus semenjak zaman kanak-kanak dan remaja. Kajian keratan rentas ini dijalankan untuk mengenalpasti hubungkait diantara status berat badan, tingkahlaku pemakanan, tahap aktiviti fizikal dengan tanda-tanda kemurungan dalam kalangan remaja di SMK Putrajaya Presint 16(1). Satu set soalan soal selidik yang terdiri daripada Soal Selidik Tingkahlaku Pemakanan (EBQ), Soal Selidik Aktiviti Fizikal untuk Remaja (PAQ-A) dan Skala Kemurungan, Kebimbangan dan Stres (DASS-21) telah digunakan untuk mengenalpasti tingkahlaku pemakanan, tahap aktiviti fizikal dan tanda-tanda kemurungan. Berat dan tinggi diukur dan Indeks Jisim Tubuh (BMI) dikira. Seramai 180 orang subjek, berumur dari 14 hingga 16 tahun telah menyertai kajian ini. Majoriti daripadanya terdiri daripada Melayu (96.7%) dan taburan jantina dalam kalangan subjek adalah sama. Prevalens tanda-tanda kemurungan adalah 17.3%. Kebanyakan (66.7%) subjek mempunyai BMI yang normal, dan 27.2% adalah berlebihan berat badan dan obes manakala hanya 6.1% adalah kurang berat badan. Majoriti (40.6%) subjek tidak mengambil makan utama 2-3 kali dalam seminggu, mengambil snek diantara waktu makan utama (91.1%), makan bersama keluarga (72.8%) dan tahap aktiviti fizikal yang sederhana (53.9%). Hanya 12.9% daripada remaja yang mempunyai tanda-tanda kemurungan tidak pernah meninggalkan pengambilan hidangan utama berbanding dengan remaja tanpa tanda-tanda kemurunan (42.3%) (χ^2=10.043, p=0.007). Hanya 13.7% daripada remaja yang ada tanda-tanda kemurungan makan bersama keluarga berbanding dengan yang tidak mempunyai tanda-tanda kemurungan (χ^2=4.092, p=0.043). BMI tidak mempunyai hubungan yang signifikan dengan tanda-tanda kemurungan (r=0.06, p=0.934). Pengambilan sarapan (r=-0.324, p=0.000) dan tahap aktiviti fizikal (r=-0.188, p=0.011) berkait songsang dengan tanda-tanda kemurungan. Secara keseluruhan, pengambilan sarapan, pengambilan makan utama, teman sewaktu makan dan tahap aktiviti fizikal ada perkaitan dengan tanda-tanda kemurungan dalam kalangaan remaja. Oleh itu, faktor-faktor ini boleh digunakan bagi mengurangkan tanda-tanda kemurungan dalam kalangan remaja.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

According to World Health Organization (WHO), health was defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Thus this indicates that mental health was one of the important components of health. The definition of mental health by WHO was a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and was able to make a contribution to his or her community (WHO, 2004).

Depression was parts of mental health where it was a psychiatric disorder, with the core defining feature being a change from pleasant to unpleasant mood, commonly termed 'dysphoric'. In children and adolescents, dysphoric mood may

present as irritability rather than sadness or depression. A mood shift was experienced as pervasive, persisting over time and place, and sufficiently severe to interrupt everyday functioning, for example ability to do schoolwork or enjoy spending time with friends (APA, 1994). A particular and severe form of dysphoric-related mood change was anhedonia, which was a marked loss of interest or pleasure in usual activities. Depression and/or anhedonia were accompanied by other symptoms in varying combinations, including negative and distorted cognitions about the self and impaired concentration and attention (APA, 1994).

Mental health problems among adolescents has become the global health issues (Belfer, 2008). Common mental disorders in adults often initially emerge in childhood and adolescence (Merikangas et al., 2008). Each year, about 20% of adolescents suffer from a mental health disorder (UNICEF, 2012). The most prevalent mental health disorder was unipolar depression which was the primary contributor to disability in this age group (Gore et al., 2011). The median prevalence estimate worldwide for an impairing mental health condition was 12% although estimates varied widely, reported by a review of child and adolescent psychiatric disorders (Costello, Egger & Angold, 2005).

Study in Malaysia (Kaur et al., 2014) shows that the prevalence of respondents which consist of school going adolescent aged 12 to 17 years old that have depressive symptoms was about 17.7%. One pilot study has commissioned by Ministry of Health and Ministry of Education on depression among students in 6

schools in Malaysia (2011) has found the prevalence of 14.1% (Kaur et al., 2014; Nuraishikin, 2012).

Besides, depressive symptoms can occur before the onset and during the episodes of depression. Subsequent psychiatric disturbance and problem drinking was predicted by symptoms of depression in adolescence (Aalto-Setala et al., 2002). One of risk factor for the development of adult depressed mood and adult depressive disorder was elevated depressive symptoms during adolescence (Aalto-Setala et al., 2002). Depressive symptoms were a sign that may exhibit in individual that might has the potential to establish the depression. Depressive symptoms were not the equivalent of physician-diagnosed depression, but it may be predictive of major depression (Herva et al., 2005).

During adolescent, depression gives significant negative physical, emotional and social consequences and will continue implications for future quality of life (Jaycox et al., 2009; Thapar, Collishaw, Pine & Thapar, 2012). This study examined the relationship between body weight status, eating behavior, physical activity and depressive symptoms among adolescent.

1.2 PROBLEM STATEMENT

The prevalence for psychiatric morbidity among children and adolescent age 15 years and below were 13.0%, 19.3% and 20.0% according to National Health Morbidity Survey, NHMS II (1996), NHMS III (2006) and NHMS IV (2011) respectively .There were increment in the prevalence rate. It was health and socioeconomic burdens due to high prevalence of mental illness which was alarming and the limited efficacy of current treatment interventions (Reeves, Postolache & Snitker, 2008).

A systematic review of epidemiological studies on adolescent mental health from low- to middle-income countries showed a prevalence of 10% to 20%, which was similar to findings in high-income countries (Kieling et al., 2011; Luppino et al., 2010). The vast range was might due to result of different risk factors, protective factors, and cultural factors among different population (Kieling et al., 2011). Plus, depression has been measured by different methods, thus lead to heterogeneity of results (Wardle & Cooke, 2005).

In 2012, the leading causes of death among adolescents were road injury, HIV, suicide, lower respiratory infections and interpersonal violence (WHO, 2014). The third to fourth cause of death among adolescent was suicide and its major risk factor was depression. The frequency of mental illness and its potential long term consequences make it an important topic to research in relation to risk factors and protective factors (Rothon et al., 2010). Adolescence represents a critical time to

study risk factors that contribute to the development of depression since the incidence of depression might reoccur during adulthood.

1.3 SIGNIFICANCE OF STUDY

Depression was one of the less pronounced mental illnesses that presence among adolescents in Malaysia. Physical and psychological growth was important during adolescent, and promoting mental health during this period was essential to the health and well-being of adolescents (Kulkarni, Swinburn & Utter, 2014). However, little was known about the factor that associated with depressive symptoms among Malaysian adolescent. Thus, by conducting this study, the real situation among Malaysian adolescent that have depressive symptoms can be detected and further steps can be indicated.

This study also can be a reference or base line for other studies and to aid in planning an intervention program to increase the community's awareness regarding the depressive symptoms. The result of this study also can be used to provide baseline information for researchers or health practitioners who aimed at reducing the negative health implications of depression. In order formation of appropriate policies in Malaysia to promote mental health to be enable, studies on prevalence of and factors associated with depression are necessary (Kaur et al., 2014).

1.4 RESEARCH QUESTIONS

I. What is the prevalence of depressive symptoms among adolescents?

II. Are there any significant associations between body weight status, eating behavior and physical activity with depressive symptoms among adolescents?

1.5 GENERAL AND SPECIFIC OBJECTIVES

1.5.1 General objective

To determine the prevalence of depressive symptoms and the associations between body weight status, eating behavior, physical activity and depressive symptoms among adolescent.

1.5.2 Specific objective

I. To assess the socio-demographic backgrounds, body weight status, eating behavior, physical activity and depressive symptoms among adolescents in Wilayah Persekutuan Putrajaya.

II. To determine the prevalence of depressive symptoms.

III. To determine the associations between socio-demographic backgrounds, body weight status, eating behavior, physical activity and depressive symptoms among adolescents.

1.6 HYPOTHESES

2.1.1 Null hypotheses

I. $H_0$1: There was no significant association between the socio-demographic background and depressive symptoms among adolescents

II. $H_0$2: There was no significant association between the body weight status and depressive symptoms among adolescents

III. $H_0$3: There was no significant association between the eating behavior and depressive symptoms among adolescents

IV. $H_0$4: There was no significant association between the physical activity level and depressive symptoms among adolescents

1.7 RESEARCH CONCEPTUAL FRAMEWORK

Body weight status, eating behavior, physical activity level and depressive symptoms among adolescent in Putrajaya.

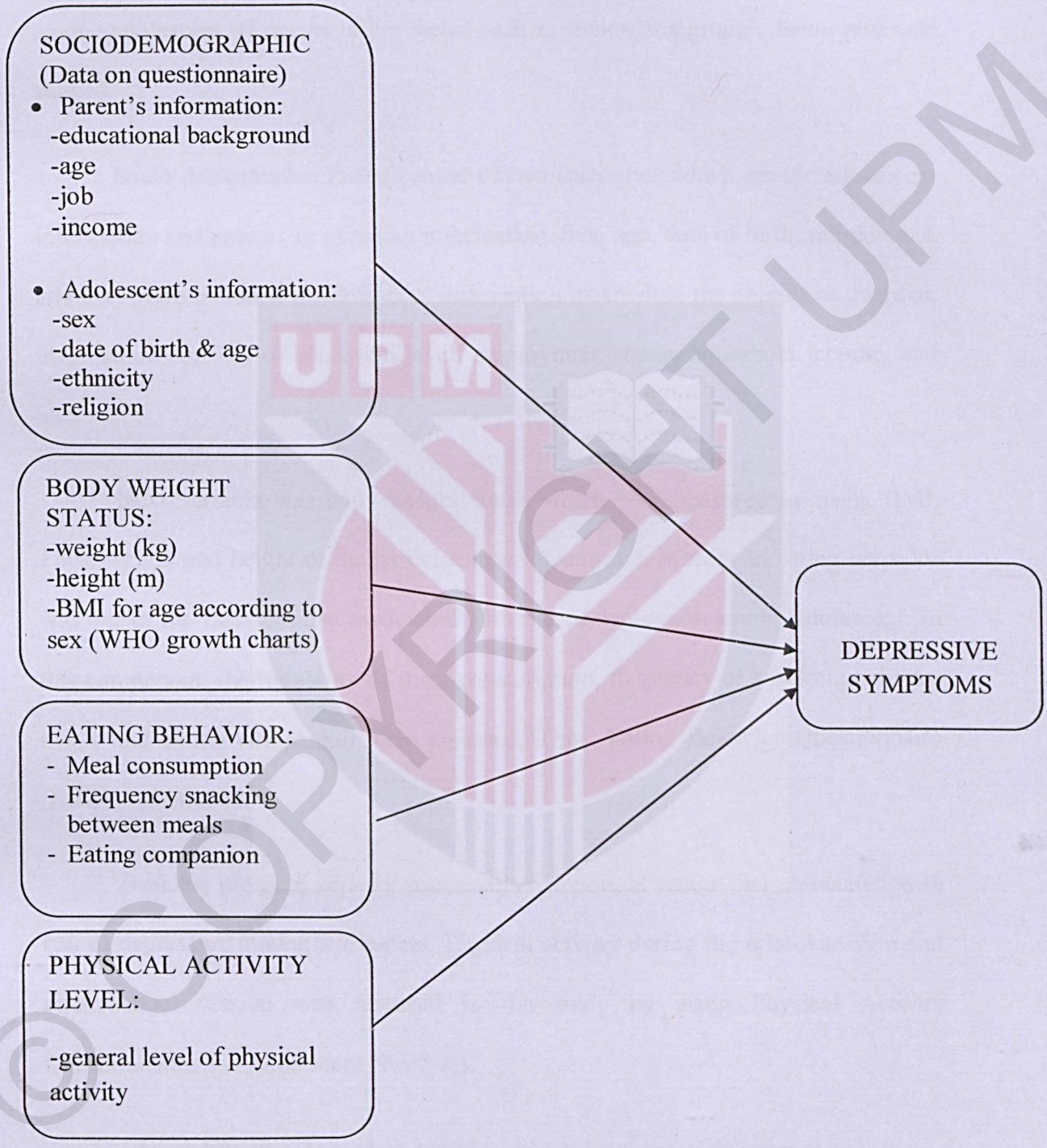

Figure 1.1: Conceptual framework of the study.

Figure 1.1 shows the conceptual framework of the study. The dependent variable of the study was depressive symptoms among adolescents. The independent variables of the study were body weight status, eating behavior and physical activity among adolescent. However, other factor such as socio-demographic factor also was studied.

Socio-demographic factor consist of two categories which are the adolescent information and parents or guardian information. Sex, age, date of birth, religion and ethnicity were included in adolescent information meanwhile the parents or guardian information consists of education level, employment status, household income, and age.

Next variable was body weight status which was measured by using BMI. Thus, weight and height of the participant was measured. Moreover, eating behavior was one of the variables that associated with risk of depression among adolescent. In this component, the regularity of meal consumption, frequency of snacking between meals and eating companion were assessed. Thus, Eating Behavior Questionnaire (EBQ) was utilized.

Besides, physical activity was another important factor that associated with risk of depression among adolescent. Physical activity during the school session and after school session was assessed in the study by using Physical Activity Questionnaires for Adolescent (PAQ-A).

Meanwhile, the dependent variable which was depressive symptoms, it was measured by Depression, Anxiety and Stress Scale DASS 21. Although there were

also anxiety and stress component in this instrument, however, only depression will be taken into consideration.

CHAPTER 2

LITERATURE REVIEW

2.1 SOCIO-DEMOGRAPHIC BACKGROUND AND DEPRESSIVE SYMPTOMS

2.1.1 Age, Sex and Ethnicity

Physical development occur during adolescents may create long term health and psychosocial consequences, thus adolescence was a critical period of time (Merten, Wickrama & Williams, 2008). It was common that adolescence with depression and it tend to be persistent, associated with a range of personal and social costs (Bamber, Stokes & Stephen, 2007). According to Patel, Flisher, Hetrick and McGorry (2007), although mental health disorders were often detected later in life, however they begin during youth (age 12-24 years old).

A 12-month period prevalence of 11.5% in 11- to 16- years old for mental disorder was reported by national survey of mental health among young people in Great Britain with emotional disorders among them were the most common (Green *et al* . 2005). Plus, the likelihood of developing depression was associated with age greater than 14 years old age with two-fold increase risk (Van Voorhees et al., 2008).

Adolescence is an important developmental period to do the intervention since it has been shown that recurrent depression that was experienced among most adults has an initial episode as teenagers (Pine, Cohen, Cohen & Brook, 2014; Aalto-Setala et al., 2002).

According to Yahaya, Abolfathi Momtaz & Othman, (2012) as compared to male adolescents, female adolescents were more prone to have mental health problems. Several studies have reported the same pattern in which female adolescents have significantly higher levels of mental difficulties than male adolescents (Yaacob, Juhari, Abu Talib & Uba, 2009; Hishinuma, Miyamoto, Nishimura & Nahulu, 2000; Andersson et al., 2010). To add, there were also old studies that reported on the likelihood of female adolescents has two to three fold increased risk of depression as compared to male adolescents (Schraedley, Gotlib & Hayward, 1999; Shaffer, 1996)

According Kaur et al., (2014) in the context of Malaysia, adolescents with Indian ethnicity were more prevalence to have depressive symptoms as compared to other ethnicity. Besides that, in India, mental health problems were also common among adolescents (Reddy, Biswas & Rao, 2012).

2.1.2 Household income and Parents Education

Low socio-economic status and poor mental health outcomes have been shown to be associated (Amone-P'Olak, 2009). According to Doyle, Harmon & Walker, (2007) the consequences of parental income towards health of children was long lasting in which outcomes such as lower education attainment, inferior labour market and worse health in later stage of life due to poor health during childhood. Thus, lower household income might affect the health outcomes of children. There were consistent finding with regards the low socioeconomic status and poverty with risks of depression among children (Van Voorhees et al., 2008; Klein, Lewinsohn, Rohde, Seeley & Olino 2005; Pachter, Auinger, Palmer& Weitzman, 2006).

Consistently, researchers have found that youth from socially advantaged families have the least depressive symptoms. The reasons were they were exposed to fewer social stressors and have greater access to coping resources. Almost all previous investigations find that socioeconomic status (SES) and social support are both inversely associated with depressive symptoms during adolescence (Brown, Meadows & Elder, 2007; Gore & Aseltine, 2003; Wickrama, Noh & Elder, 2009).

A lot of studies show that the depressive symptoms of adolescents were inversely related to parental income, education, and household income (Goodman, Huang, Wade & Kahn, 2003; Wight, Botticello & Aneshensel, 2006) and positively associated with family poverty (McLeod & Owens, 2004; Wickrama, Noh & Elder, 2009). According to Park, Heo, Subramaniam, Kawachi and Oh, (2012), they found

there was no difference in the Family Affluence Score (AFS) between those having and not having depressive symptoms.

Besides that, there was twofold higher risk of the onset of depressive episodes among adolescents with neither parent graduating from high school (Van Voorhees et al., 2008). The influence of parental education on adolescent depression have reported on association between low parental educational attainment and more likelihood of depression experience (Wickrama, Noh & Elder, 2009; Kraus & Karaman, 2013)

2.2 BODY WEIGHT STATUS AND DEPRESSIVE SYMPTOMS

The prevalence of obesity and psychological morbidities among adolescent have been rising concurrently. One meta-analysis study perform by Luppino et al., 2010 have confirms a reciprocal link between depression and obesity. Depression was found to be predictive of developing obesity and at the same time obesity was found to increase risk of depression, most pronounced among Americans and for clinically diagnosed depression.

As compared to normal weight adolescents, even after controlling for prior depressive symptoms in adolescence, obese adolescent females have more depressive symptoms in young adulthood. While for adolescent males, obesity status is not

associated with poorer psychosocial outcomes in young adulthood (Merten, Wickrama & Williams, 2008).

According to a cross sectional study by Cortese et al., (2009), there were significant association between body weight status and depressive symptoms. It was reported that the lowest severity of depression was related with moderately underweight status (BMI z-scores <-1) meanwhile the increase in body size above average (BMI z-scores >0) but still in normal range will trigger the increment of severity of depressive symptoms. Since this was a cross sectional study, thus causal inferences cannot be made. There were possibilities that depressive symptoms leads to body weight status or vice versa or the presence of third factor might responsible in this relationship.

However, there are possible suggestive evidences for the bidirectional pattern between body weight status and depressive symptoms. Overweight adolescents may feel distressed due to the stressful nature of dieting and at the same time the emergence of various physical health problems that associated with being overweight (Needham & Crosnoe, 2005). On the other hand, there are also possibilities that the depressive mood make a contribution to individual's weight status. There a high proportion of individual with depressive symptoms tend to have elevated appetite and then cause to overeat and to reduce their physical activity which then cause in weight gain (McElroy et al., 2004).

Luppino et al., (2010) have found bidirectional associations between depression and obesity in which obese persons had a 55% increased risk of

developing depression over time, while depressed persons had a 58% increased risk of becoming obese. The reason behind these might be that depressed persons, through dysregulated stress systems or through unhealthy lifestyles, develop more obesity over time and alternately it was also possible that obesity, in which through its negative effects on self-image or somatic consequences, results in the development of depression over time.

One longitudinal study conducted by Herva et al., 2005 with aim to determine the association between body size and depression in a longitudinal setting in Northern Finland 1966 Birth Cohort (NFBC 1966) and to explore the connection between obesity and depression in young adults at the age of 31 years. The follow-up were done at 14 and 31 years. They found that obesity at the age of 14 associated with depressive symptoms at the age of 31 with male (adjusted OR 1.97, 95% CI 1.06–3.68) and female subjects (adjusted OR 1.64, 95% CI 1.16–2.32). However, it was not statistically significant with physician-diagnosed depression or the use of antidepressant in adulthood. The limitation of the study was the self-reported weight and height at 14 years where obese subject underreporting their weight was probable. Furthermore, obesity was common among those who lost to follow-up and hence, it may limit the generalization to the whole population. The advantage of this study was they used 3 different ways of measuring depression which were Hopkins Symptom Check List-25 (HSCL-25), the use of antidepressants as a measure of current depression and physician-diagnosed depression as a measure of lifetime depression.

There were also studies that found no significant associations between body weight status and depressive symptoms. Kim and Kim, (2001) found that BMI was not associated with level of either self-esteem or depression. According to Swallen et al., (2005), there was no statistically significant relationship between BMI and psychosocial outcomes.

2.3 EATING BEHAVIOR AND DEPRESSIVE SYMPTOMS

2.3.1 Meal consumption, skipping meal behavior and depressive symptoms, snacking between meal, snacking behavior and depressive symptoms

One cross sectional study performed by Fulkerson et al., 2004 found that health promoting behavior such as eating breakfast, lunch and dinner were negatively significant with depressive symptoms for both male and female adolescent. However, snacking between meal and fast food consumption were not significantly associated with depressive symptoms among adolescent. The reasons behind this might due to the adolescent with depressive symptoms either prevent themselves from social interactions that related with regular meals or they were in environments where such meals are not available thus contributing to the feeling of loneliness and isolation. In line with this finding, a study by Eisenberg, Olson, Neumark-Sztainer, Story & Bearinger, (2004) also show an inverse relationship between meal frequency and psychological and psychosocial outcomes.

Irregular consumption of breakfast which categorized as poor dietary behavior with adolescent mental health may be associated. A study has reported that adolescent who did not consume breakfast five days per week were 27% more likely to exhibit psychological distress (Arbour-Nicitopoulos, Faulkner & Irving, 2012). A finding from study conducted by Lien, (2007) which was eating breakfast regularly was associated with reduction in mental distress.

Regarding the depression or stress, a healthy diet may have a gender-specific protective effect. Eating behaviors were more strongly associated with depression and other risk behaviors for female adolescents than their male counterparts (Tomori & Rus-Makovec, 2000). A study conducted by Mikolajczyk, El Ansari & Maxwell, (2009) has found that among female students, less frequent consumption of fruits or vegetables and meats were associated with depressive symptoms. Additionally, more frequent consumption of sweets or fast foods and less frequent consumption of fruits or vegetables were associated with perceived stress. Meanwhile, among male students none of the food consumption categories were associated with depressive symptoms or perceived stress.

2.3.2 Eating companion and depressive symptoms

Having meal together with the children may protect them from having depression and risky behavior through giving them a regular and comforting context

in which they can tell their parents, share about their day-to-day activities and to connect with them emotionally (Musick & Meier, 2012)

Eisenberg et al., (2004) also observed similar significant findings but only among adolescent females. The authors reported that a one-unit increase in family meal frequency was associated significantly with reduced odds of experiencing high depressive symptoms within the past 12 months among female adolescents (OR 0.92; 95 % CI 0.86–0.98), but only trended among males' depressive symptoms (OR 0.93; 95 % CI 0.86–1.00) (Eisenberg et al. 2004) Greater frequency of family meals was associated with significantly lower odds of the high depressive symptoms.

Fulkerson et al., (2009) observed that adolescents reporting five to seven family dinners in the past week showed significantly lower depressive symptoms within the past month than adolescents who reported no family dinners within the past week ($p<0.05$). Family dinner frequency was significantly inversely associated with depressive symptoms.

Another study by Fulkerson et al., (2006) found that, after controlling for family support and communication, adolescents who ate five to seven dinners with their family per week were significantly less likely to be frequently depressed and/or have attempted suicide compared to adolescents who reported eating one family dinner per week or less (OR 0.60; 95 % CI 0.54–0.65).

2.4 PHYSICAL ACTIVITY LEVEL AND DEPRESSIVE SYMPTOMS

Voluntary participation in sporting activities outside of school could increase social networks, which in turn could provide the child with better social support, which may protect against the development of emotional problems (Wiles et al., 2008). Generally, as compared to healthy individuals, persons with depressive have reduced physical work capacity and were physically sedentary in their daily life (Garrison, Addy, Jackson, McKeown & Waller, 1992). Thus, this has indicates that depressive state and physiological wellbeing has an associations and those with depression may have limited functional capacity and predispose to diseases related to physical inactivity (Nabkasorn et al., 2006).

Physical activity has been shown to have an effect towards the risk of depression. There is one longitudinal study conducted by Rothon et al., 2010 found that there is an association between physical activity and depression in adolescents. An 8% decreased in the odds of depressive symptoms for boys and girls was associated by an increase in physical activity of about 1 hour a week. However, it was associated cross sectional and they have lack of evidence for an association in the longitudinal analysis. One of the limitation of this study was they used self-reported measure for physical activity that was taken from Health Education Authority. The instruments only measures the physical activity outside school in which activity taken within a school, during physical education classes (PE) and break times was not taken into account. Thus, it may not adequately reflect the energy expenditure of the respondents.

One cross sectional study conducted by Adeniyi et al., 2011 among adolescent in a developing country, Nigeria has found a significant inverse relationship between depression and physical activity level ($r = -0.82$, $p = 0.001$). Depression was measured by using Children's Depression Inventory (CDI) and physical activity level has utilized Physical Activity Questionnaires for Adolescent (PAQ-A) which has also measure the activity during the school session such as during Physical Education classes (PE). One of the limitation of this study is they were not able to claim whether depression precedes physical inactivity or physical inactivity precedes depression because the association that exists might be bidirectional. Plus, there may be other potential confounders of depression apart from age and sex that the study did not investigate, thus indicates that the relationship not necessarily causal.

Furthermore, in a randomized control trial conducted by Nabkasorn et al., (2006) reported that the depressive state have significantly alleviated and physiological fitness condition have improved through reduction off the urine cortisol and epinephrine excretions by mild level of group jogging exercise. The results has show support with the assumption that a variety of psychological and physiological conditions can be enhanced by a regular physical exercise.

CHAPTER 3

METHODOLOGY

3.1 STUDY DESIGN

This was a cross sectional descriptive study where data was collected at one point of time.

3.2 STUDY LOCATION

The study was carried out in Wilayah Persekutuan Putrajaya (Wilayah Persekutuan Putrajaya). According to Department of Statistics Malaysia, the population distribution of W.P. Putrajaya was about 68,361 which made up of 64,644 Malays, 452 Chinese, 820 Indians, 787 other Bumiputra, 82 others and 1576 non-

Malaysian citizens. W.P Putrajaya was highly urbanized although it was consider as least populated states. There were 11 secondary schools in W.P Putrajaya, which consists of 9 regular secondary schools, 1 fully residential secondary school and 1 religious secondary school. In total, there were about 6801 secondary school students in W.P. Putrajaya which indirectly shows that W.P. Putrajaya was a suitable location for this study as there were quite a large number of secondary students.

3.3 SUBJECTS

Subjects of the study were from Form 2 and Form 4 students, age 13 until 16 years old. The inclusion and exclusion criteria are:

Table 1.1: Inclusion and exclusion criteria of the subjects

Inclusion criteria	Exclusion criteria
Students of Form 2 and Form 4 Malaysian adolescents	Adolescent with physical disability and chronic diseases

3.4 SAMPLE SIZE

According to Kaplan et al., (1980) the health behavior and depressive symptoms were significantly correlated (r=0.43, P<0.01). Thus, the formula for sample size calculation was:

Sample size, n $= \frac{(Z_{1-\alpha/2}+Z_{1-\beta})^2}{d^2/(1-d^2)} + 5$ (Cole, 1997)

Where,

n = required sample size

$Z_{1-\alpha/2}$ = confidence level at 95% (1.96)

$Z_{1-\beta}$ = power at 95% (1.96)

d = significant correlation (0.43)

Thus, the minimum sample size:

Correlation, r=0.43:

$$= \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{d^2/(1-d^2)} + 5$$

$$= \frac{(1.96 + 1.96)^2}{0.43^2/(1-0.43^2)} + 5$$

$$= 72.74$$

From the minimum sample size, 10% was added to the sample size to account for non-response or missing or recording error data. After added 10%, the sample size that required was 80.

3.5 SAMPLING DESIGN

For the purpose of sampling, the lists of secondary school in W.P. Putrajaya were obtained from Ministry of Education. Altogether, there were 9 regular secondary schools, 1 fully residential school and 1 religious secondary school. However, only regular secondary schools were chosen for the sampling process.

The schools were Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 8, Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 9 (1), Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 16, Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 11 (1), Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 9 (2), Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 14, Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 11 (2), Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 18 and Sekolah Menengah Kebangsaan (SMK) Putrayaja Presint 5. From the 9 regular secondary schools, only 1 school was selected by purposive sampling method and also in choosing the classes. After that all student that have meet the inclusion criteria were included in the study. Figure 2.2 shows the sampling process.

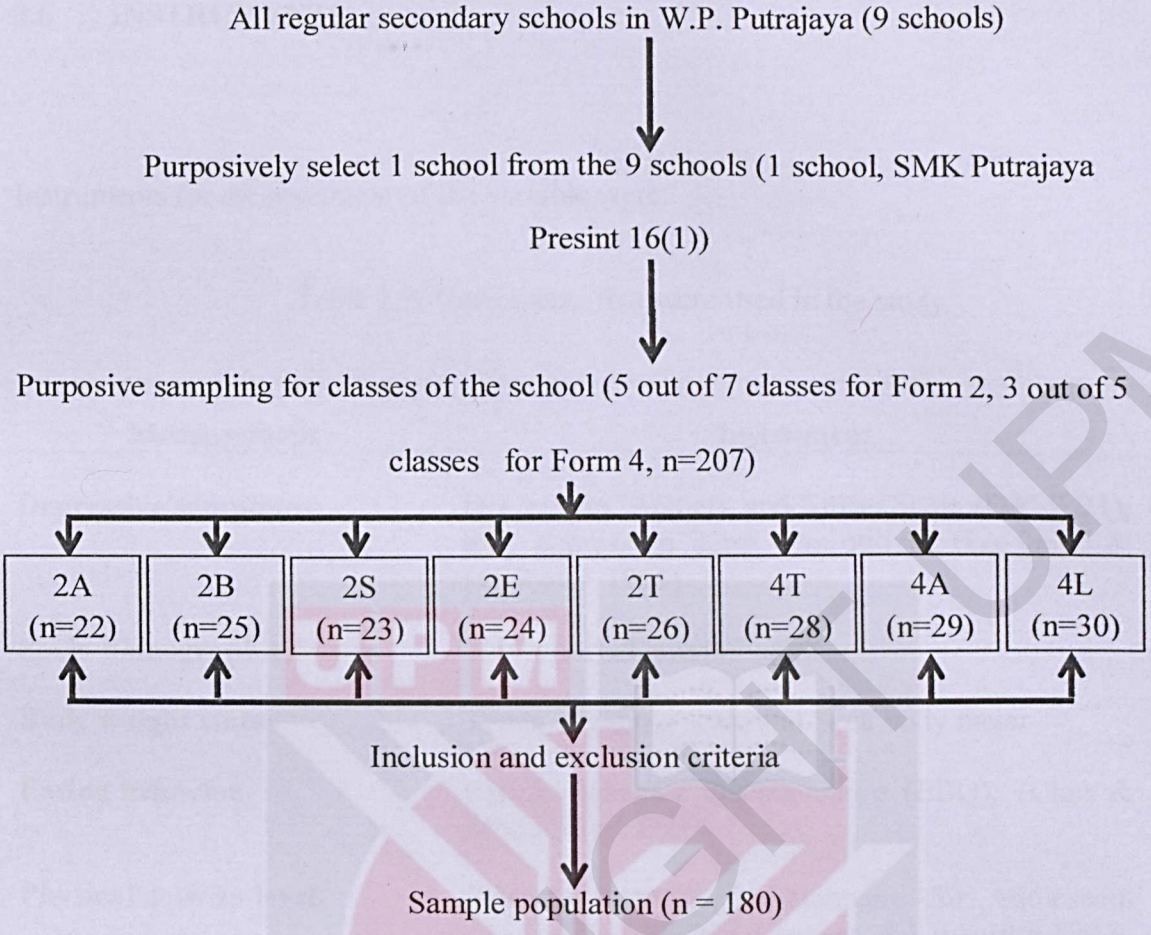

Figure 2.2: Sampling method for subjects' selection

3.6 INSTRUMENTS

Instruments for measurement of the variable were:

Table 2.2: Instruments that were used in the study

Measurement	Instrument
Depressive symptoms	Depression, Anxiety and Stress Scale (DASS 21), only depression items was utilized (Lovibond & Lovibond, 1995)
Socio-demographic factor	Self-reported questionnaire
Body weight status	Tanita weighing scale and Seca body meter
Eating behavior	Eating Behavior Questionnaire (EBQ), (Chin & Mohd Nasir, 2009)
Physical activity level	Physical Activity Questionnaire for Adolescent (PAQ-A), (Kowalski, Crocker, & Kowalskl, 1997)

The dependent variable of this study was depressive symptoms. Thus, it was measured by using Depression, Anxiety and Stress Scale (DASS 21). In this questionnaire, there are 3 components which are depression, anxiety and stress and for each component consist of 7 questions. Only depression component was used for the purpose of the study. Answer for each question will scored as 0 (did not apply to me at all or never), 1 (applied to me some degree or sometimes), 2 (applied to me to a consideration degree or often) or 3 (applied to me very much or almost always). The sum scores of depression items was multiplied by 2 and scoring for DASS 21

was range from 0 to 28 and above. The category for the depressive symptoms according to score were:

Table 3.3: The category for depressive components in DASS 21

Status	Score
Normal	0-9
Mild	10-13
Moderate	14-20
Severe	21-27
Extremely severe	28 and above

(Source: www.psy.unsw.edu.au/groups)

In this study, all the scoring was further categorized into adolescents with depressive symptoms and adolescents without depressive symptoms to account for the prevalence of depressive symptoms among the adolescents. Those who scored 13 and below, classified as without depressive symptoms and those scored 14 and above for the depressive components, considered as with depressive symptoms.

Socio-demographic factor was assessed by using self-reported questionnaire. This section consists of respondent's information and their parents or guardian information. For the respondents, data on date of birth, age, sex, ethnicity and religion will be collected. Meanwhile, parent's or guardian's information will contain father's age, income per month of father, mother's age, income per month of mother, household income, educational background and employment status.

On the other hand, body weight status was assessed by using anthropometric measurement. Thus, weight and height of the subjects were measured then Body Mass Index (BMI) was calculated then classified according to World Health Organization (WHO) Growth Chart Reference 2007 for each sex. The weight and height of the respondent were measured by using TANITA weighing scale and SECA body meter respectively.

Eating behavior component was assess and has utilized Eating Behavior Questionnaire (EBQ). For this self-reported questionnaire, there were items that assessed the frequency of meal consumption, frequency of snacking between meals and eating companion. Scoring will be according to the Likert Scale which 1 (indicates everyday), 2 (indicates 4-6 times a week), 3 (indicates 2-3 times a week), 4 (indicates once a week), 5 (indicates 1-3 times a month) and 6 (indicates never/less than once a month). For skipping meal behavior, the higher the score, the lower the skipping meal. Meanwhile, for the snacking meal behavior, the higher the score, the higher the snacking.

Physical activity level was assessed by using Physical Activity Questionnaire for Adolescent (PAQ-A) questionnaire. The purpose of using this questionnaire was to assess the physical activity behavior among the respondents. Scoring was based on a five-point scale, with an overall physical activity score derived from the mean of each scored item. Higher scores indicate the greater levels of physical activity and vice versa. The overall physical activity scores will later categorize as low physical activity level (1.00 to 2.33), moderate physical activity level (2.34 to 3.66), or high

physical activity level (3.67 to 5.00) (Dan, Mohd Nasir, & Zalilah, 2011). The questionnaire has a high internal consistency with Cronbach's alpha value was found to be 0.89.

3.7 DATA COLLECTION PROCEDURE

The data were collected on 12th January 2015 until 12th February 2015. Ethical approval was obtained from the Research Ethics Committee of Faculty Medicine and Health Science, UPM. Meanwhile, the permission to conduct the study in schools setting was obtained from Ministry of Education, Department of Education and Schools Principals.

After that, consent form and information sheet were distributed one week before the data collection. Consent form requires permission from their parents was attached together with the information sheet, so that they were aware about the study that was conducted. Respondents who agree to join the study were required to get sign of their parents on the consent forms.

Besides that, the instruments that were used for data collection were anthropometric measurement and self-administered questionnaire. Anthropometric was measured in term of body weight and height for Body Mass Index (BMI) calculation. Meanwhile, the questionnaire consists of 4 sections. Section A was about socio-demographic factor that contain respondent's information and their parents or guardians information. Moreover, Section B was for Eating Behavior Questionnaire

(EBQ), Section C was for physical activity level that utilized Physical Activity Questionnaire for Adolescent (PAQ-A) and section D was for Depresssion, Anxiety and Stress scales (DASS21). All the questionnaires were in Malay language.

In addition, the self-reported questionnaire was close-ended questions. Close ended questions were easier to administer, analyze and it requires a shorter time to complete. Furthermore, all the instruments were already validated.

3.8 DATA ANALYSIS

The data was analyzed using SPSS version 20 (SPSS IBM, New York, USA). Descriptive statistics such as frequency, percentage, mean and standard deviation were used to show the distributions of the variables in this study. Inferential data such as Chi-square and Pearson correlation will be used to determine the association between variables. All the statistical analysis was conducted at a 95% confidence interval or p value <0.05.

CHAPTER 4

RESULTS AND DISCUSSIONS

An assessment of body weight status, eating behavior, physical activity level and depressive symptoms was carried out among adolescents aged 14 to 16 years old in Sekolah Menengah Kebangsaan Putrajaya Presint 16(1).

4.1 SOCIO-DEMOGRAPHIC BACKGROUND

A total of 180 respondents were recruited in this study. Table 4.1 shows the summary of socio-demographic background of the subjects. Approximately 60% of the subject age 14 years old, with mean age 14.40±1.01, ranged from 14 to 16 years old. A majority of the subjects were Malay (97.2%) and followed by Indian (2.8%). The ratio of male to female subjects was equally distributed.

Table 4.1: Distribution of subjects according to socio-demographic background

Characteristics	Total (n=180)	Mean ± SD
Age		14.40±1.01
14	107 (59.4)	
16	73 (40.6)	
Ethnicity		
Malay	175(97.2)	
Indian	5 (2.8)	
Religion		
Islam	176 (97.8)	
Buddhism	2 (1.1)	
Hindu	2 (1.1)	

The socio-demographic background of parents of the subjects was presented in Table 4.2. Almost half of the parents were having Degree/Master/PHD as their education background. For father's employment status, about 52.8% of them were government employed, followed by 21.7% were in the private sector and 15.0% works independently. Meanwhile, for the mothers, 47.2% of them were government employed, 22.8% were housewives, 14.4% worked in private sector and 10.6% worked independently. Most of the subjects (66.7%) had a high household income (>RM5600), followed by medium household income, RM2300-RM5599 (31.6%) and only 1.7% were from low household income (<RM2299) group and the mean for household income were RM8261.51 ± 4482.00.

Table 4.2: Frequency and percentage distribution parents' socio-demographic background of the subjects.

Characteristics	Total (n=180)	Mean ± SD
Father's Education Level		
Secondary	31 (17.2)	
Pre-U/STPM/Diploma	49 (27.2)	
Degree/Master/PHD	100 (55.6)	
Mother's Education Level		
Primary	2(1.1)	
Secondary	42(23.3)	
Pre-U/STPM/Diploma	54(30.0)	
Degree/Master/PHD	82 (45.6)	
Father's employment status		
Government	95 (52.8)	
Private	39 (21.7)	
Independent	27 (15.0)	
Others	19 (10.6)	
Mather's employment status		
Government	85 (47.2)	
Private	26 (14.4)	
Independent	19 (10.6)	
Housewife	41 (22.8)	
Others	9 (5.0)	
Household income		8261.51 ± 4482.00
Low (<2299)	3(1.7)	
Medium (2300-5599)	57(31.6)	
High (>5560)	120(66.7)	

4.2 BODY WEIGHT STATUS

The body weight, height and Body Mass Index (BMI) of the respondents were tabulated in table 4.3. The mean weight (kg) for male (56.21±17.88) was higher than female (51.79±12.65) but the differences were not significant. Meanwhile, for height (m) male has a higher mean (162.55±7.54) than female (154.27±6.15) and the differences were significant. There were no significant differences for BMI (kgm^{-2}) where the mean for male was 21.05±5.75 and female was 21.75±4.99.

Table 4.3: Mean ±SD of the respondents for body weight (kg), height (m) and BMI (kgm^{-2})

Variable	Mean±SD		t	p-value
	Male (n=90)	Female (n=90)		
Weight (kg)	56.21±17.88	51.79±12.65	1.911	0.058
Height (m)	162.55±7.54	154.27±6.15	8.072	0.000*
BMI (kgm^{-2})	21.05±5.75	21.75±4.99	-0.869	0.386

BMI of the respondents were categorised according to BMI Growth Chart 2007. Most of the respondents (66.7%) were having normal BMI. However, 6.1% of them were underweight with majority of them were male (72.7%) and followed by female (27.3%). About 27.2% of the respondents were overweight and obese. The mean of the BMI was 21.40±5.38.

Table 4.4: The distribution of body weight status of the respondents according to BMI category

Characteristics	n(%)			Mean ± SD
	Male (n=90)	Female (n=90)	Total (n=180)	
Body weight status				21.40 ± 5.38
Underweight	8(8.9)	3(3.3)	11(6.1)	
Normal	56(62.2)	64(71.1)	120(66.7)	
Overweight and obese	26(28.9)	23(25.6)	49(27.2)	

4.3 EATING BEHAVIOR

Table 4.5 shows the eating behaviour of the respondents. Only 22.8% of the respondents were having their breakfast daily, while about 28.9% have their breakfast 2-3 times per week. Majority, 42.2% and 42.8% of the respondents were having lunch and dinner respectively everyday. About 60% of the respondents were having their morning tea like almost daily, while majority of them 42.8% and 35.6% were having afternoon tea and supper 2-3 times per week.

Table 4.5: The distribution of the respondents for their main meal consumption and snacking between meals

	Daily	4-6 times/ week	2-3 times/ week	Once/ week	1-3 times/week
Main meals					
Breakfast	41(22.8)	46(25.6)	52(28.9)	23(12.8)	18(10.0)
Lunch	76(42.2)	59(32.8)	31(17.2)	7(3.9)	7(3.9)
Dinner	77(42.8)	61(33.9)	30(16.7)	6(3.3)	6(3.3)
Snacking between meals					
Morning tea	54(30)	55(30.6)	39(21.7)	15(8.3)	17(9.4)
Afternoon tea	14(7.8)	49(27.2)	77(42.8)	21(11.7)	19(10.6)
Supper	8(4.4)	24(13.3)	64(35.6)	46(25.6)	38(21.1)

For skipping meal behavior, most (40.6%) of the respondents skipped their meals 2-3 times per week (breakfast, lunch or dinner). Male respondents (57.5%) skipped all meals more than the female respondents (42.5%). Majority (91.1%) of the respondents were snacking with most of them were female respondents (92.9%).

Table 4.6: The distribution of skipping meal behavior, snacking behavior, eating companion of the respondents

	Male (n=90)	Female (n=90)	Total (n=180)
Skipping meal behavior			
Skipped all meal	23(25.6)	17(18.9)	40(22.2)
Skipped 2-3 times per week	32(35.6)	41(45.6)	73(40.6)
Never skipped meal	35(38.9)	32(35.6)	67(37.2)
Snacking behavior			
Snacking	4(4.4)	78(86.7)	164(91.1)
Never snacking	86(95.6)	12(13.3)	16(8.9)
Eating companions			
Eating with family	66(73.3)	65(72.2)	131(72.8)
Eating with peers	13(14.4)	14(15.6)	27(15.0)
Eat alone	11(12.2)	11(12.2)	22(12.2)

4.4 PHYSICAL ACTIVITY LEVEL

The physical activity level of the respondents was tabulated in table 4.7. About half (53.9%) of the respondent were categorised as having moderate level of physical activity. 42.8% of the respondents were in low level of physical activity level with half of the female were categorised as having low physical activity level. Only 3.3% of the respondent were having high level of physical activity with 83.3% of them were male and 16.7% were female.

Table 4.7: The distribution of physical activity level of the respondents

Characteristics	n(%)		
	Male (n=90)	Female (n=90)	Total (n=180)
Physical activity level			
Low	32(35.6)	45(50.0)	77(42.8)
Moderate	53(58.9)	44(48.9)	97(53.9)
High	5(5.6)	1(1.1)	6(3.3)

4.5 DEPRESSIVE SYMPTOMS

Table 4.8 shows the distribution of the respondents according to the category of the depressive components. Majority (64.4%) of the respondents were categorised as normal with equal distribution among male and female respondents. However, there were 2.9% of them were having severe category of depressive components.

Table 4.8: The distribution of depressive components of DASS 21 of the respondents

Characteristics	n(%)		
	Male (n=90)	Female (n=90)	Total (n=180)
Depression			
Normal	58(64.4)	58(64.4)	116 (64.4)
Mild	14(15.6)	19(21.1)	33 (18.3)
Moderate	15(16.7)	11(12.2)	26 (14.4)
Severe	3(3.3)	2(2.3)	5(2.9)

For respondents with depressive symptoms, the prevalence was 17.3%, while respondents without depressive symptoms were 82.7%. The prevalence of depressive symptoms is consistent with the study conducted by Kaur et al., (2014) among Malaysian school going adolescents.

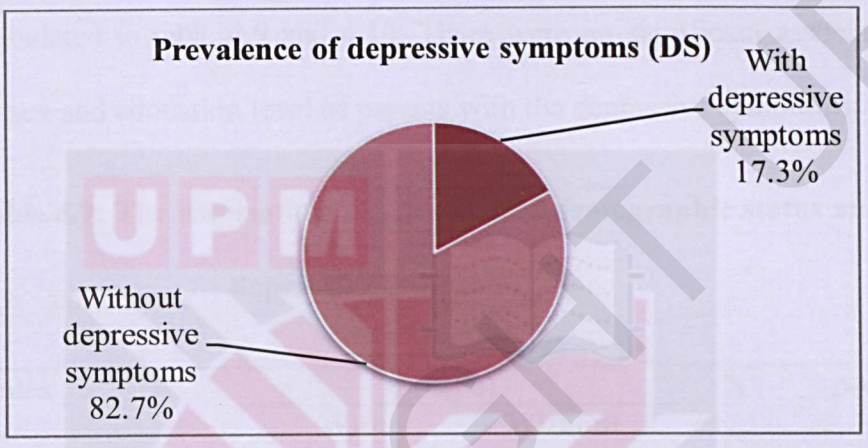

Figure 4.1: The prevalence of depressive symptoms of the respondents

4.6 HYPOTHESIS TESTING

$H_0$1: There is no significant association between the socio-demographic background and depressive symptoms among adolescents.

The association between socio-demographic factor and depressive symptoms among adolescents were analyzed by using χ^2 test and Pearson Correlation test which were tabulated in table 4.9 and 4.10. There were no significant associations between ages, sex and education level of parents with the depressive symptoms.

Table 4.9: The associations between socio-demographic status and depressive symptoms

Variables	n(%)		X^2	p-value
	With depressive symptoms	Without depressive symptoms		
Age			0.330	0.566
14	17(54.8)	90(60.4)		
16	14(45.2)	59(39.6)		
Sex			0.974	0.324
Male	18(58.1)	72(48.3)		
Female	13(41.9)	77(51.7)		
Education level				
Father's education level			4.000	0.135
Secondary and below	6(20.0)	25(17.4)		
Pre U/STPM/Diploma	4(13.3)	45(31.2)		
Degree/Master/PHD	20(66.7)	74(51.4)		
Mother's education level			0.349	0.840
Secondary and below	6(20.7)	38(25.7)		
Pre U/STPM/Diploma	9(31.0)	45(30.4)		
Degree/Master/PHD	14(48.3)	65(43.9)		

*significant at p-value <0.05

Pearson Correlation test also was applied to age and household income. However, there were no significant correlation between both age and household income with depressive symptoms. This was consistent with the finding by Park, Heo, Subramanian, Kawachi and Oh, (2012) where there family affluence score was not related with depressive symptoms among adolescents. In addition, they also found that more highly educated parents that living in urban area showed no significant associations with depressive symptoms among adolescents which in line with the finding of the current study.

Table 4.10: The correlation between age and household income with depressive symptoms

Variables	Depressive symptoms	
	r	p
Age	0.094	0.211
Household income	-0.042	0.579

*significant at p-value <0.05

$H_0$2: There is no significant association between the body weight status and depressive symptoms among adolescents

Most (71.0%) adolescents with depressive symptoms were having normal BMI, which similar with adolescents without depressive symptoms also majority (65.8%) have normal BMI. There was no significant association between the BMI category and the depressive symptoms among the adolescents.

Table 4.11: The association between body weight status and depressive symptoms

Variables	n(%)		X^2	p-value
	With DS	W/o DS		
Body mass index			0.407	0.816
Underweight	2 (18.2)	9 (81.8)		
Normal	22 (18.3)	98 (81.7)		
Obese and overweight	7 (14.3)	42 (85.7)		

*significant at p-value <0.05

After conducting Pearson Correlation test for the variable body weight status and depressive symptoms, there was no significant correlation between the variables. This finding was in line with other studies (Kim & Kim, 2001; Swallen et al., 2005) where there also found no significant relationship between these two variables. However this finding was contradict with the finding by Luppino et al., 2010 where

they found a bidirectional association between obesity and depressive symptoms among adolescents. The risk of obese persons had increased risk of developing depression over time was 55%, whereas depressed persons had increased risk of becoming obese was 58%.

Table 4.12: The correlation between body weight status and depressive symptoms

Variables	**DS**	
	r	p-value
Body mass index	0.06	0.934

*significant at p-value <0.05

$H_0$3: There is no significant association between the eating behavior and depressive symptoms among adolescents

Table 4.13 shows the analysed data for the association between skipping meal behavior, snacking behavior and eating companion with depressive symptoms. A significant association was found between skipping meal behavior and depressive symptoms. Only 12.9% of the adolescents with depressive symptoms were never skipped meal as compared to adolescents without depressive symptoms which was about 42.3% of them were never skipped meal. This finding was consistent with other study by Eisenberg, Olson, Neumark-Sztainer, Story and Bearinger, (2004) that found inverse relationship between meal frequency and psychological and psychosocial outcomes, noted that the scoring for skipping meal behavior in this study was in inverse manner. Plus, according to Fulkerson et al., (2004) by having breakfast, lunch and dinner were inversely associated with depressive symptoms for both male and female adolescents.

On the other hand, there were no significant association between snacking behavior and depressive symptoms. This finding was in line with study by Fulkerson et al., (2004) where snacking between meal was not significantly associated with depressive symptoms among adolescents.

Eating companion was significantly associated with depressive symptoms. Only 13.7% of the subjects with depressive symptoms had meal with family as compared to those without the depressive symptoms. Adolescents who have five to seven family dinners, which literally means have meal frequently with the family in

the past week showed significantly lower depressive symptoms within the past month than adolescents who reported no family dinners within the past week ($p<0.05$), (Fulkerson et al., 2009; Eisenberg et al., 2004).

Table 4.13: The association between eating behavior and depressive symptoms

Variables	n(%)		X^2	p-value
	With DS	W/o DS		
Eating behaviour				
Skipping meal behaviour			10.043	0.007*
Skipped all meal	11 (27.5)	29 (72.5)		
Skipped 2-3 times per week	16 (21.9)	57 (78.1)		
Never skipped meal	4 (6.0)	63 (94.0)		
Snacking behavior			2.424	0.119
Snacking	26 (15.9)	138 (84.1)		
Never snacking	5 (31.2)	11 (68.8)		
Eating companion			4.092	0.043*
Family	18 (13.7)	113 (86.3)		
Friends and alone	13 (26.5)	36 (73.5)		

*significant at p-value <0.05

Pearson correlation test was also applied for the main meal consumption, snacking between meal consumption with the depressive symptoms. An inverse correlation was found between breakfast consumption and depressive symptoms.

However, for all the rest of the main meal consumption and snacking between meal components, there were no significant correlations with the depressive symptoms.

This was consistent with the finding with Lien (2007) where eating breakfast regularly was associated with reduction in mental distress. Tanihata et al., has reported that students who skipped breakfast were significantly associated with poorer mental health. A study also has reported that adolescent who did not consume breakfast five days per week were 27% more likely to exhibit psychological distress (Arbour-Nicitopoulos, Faulkner & Irving, 2012).

Table 4.14: The correlation between eating behavior amd depressive symptoms

Variables	**DS**	
	r	p-value
Main meals		
Breakfast	-0.324	0.000**
Lunch	-0.071	0.341
Dinner	0.057	0.444
Snacking between meals		
Morning tea	0.017	0.818
Afternoon tea	-0.40	0.595
Supper	-0.109	0.144

**significant at p-value <0.00

$H_0$4: There is no significant association between the physical activity level and depressive symptoms among adolescents

The χ^2 test for physical activity level with depressive symptoms was tabulated in table 4.15. There was no significant association between the physical activity level and depressive symptoms.

Table 4.15: The association between physical activity level and depressive symptoms

Variables	n(%)		X^2	p-value
	With DS	W/o DS		
Physical activity level			0.087	0.768
Low	14 (18.2)	63 (81.8)		
Moderate and high	17 (16.5)	86 (83.5)		

*significant at p-value <0.05

Table 4.16 shows the significant correlation between physical activity level and depressive symptoms. Physical activity was inversely correlated with depressive symptoms. Adolescents with active lifestyle may protect themselves from developing the depressive symptoms. However, it was a weak correlation. This finding has support with other studies (Rothon et al., 2010; Adeniyi et al., 2011; Hong et al., 2009) where they also found an inverse association between physical activity level and depressive symptoms among adolescents.

Table 4.16: The correlation between physical activity level and depressive symptoms

Variables	DS	
	r	p-value
Physical activity level	-0.188	0.011*

*significant at p-value <0.05

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

In this study, adolescents with depressive symptoms were observed to tend to infrequent intake of breakfast, more skip meal, less likely to have meal with the family and less physically active. Improvement in eating behavior for example, having breakfast regularly, have every meal on the appropriate time, make family as eating companion and also get engage with physical activity are potential factor that might protect the adolescents from developing the mental illness such as depression.

All in all, strategies that take these factors into consideration might offer a great potential to reduce depressive symptoms among adolescents.

5.2 LIMITATIONS AND RECOMMENDATIONS

There were several limitations in this study. First, the study itself was a cross sectional study. Thus, the causal relationship cannot be established and the

mechanism which one develops first cannot be study. For example, the bidirectional association between body weight status and depressive symptoms. In order to overcome this limitation, perhaps a longitudinal study can be used. By having this study, the respondents will be follow for a period of time, thus can contribute to the relationship that actually present behind this.

Next, majority of the respondents were Malay and Islam which cause the generalization of the finding cannot be made. Malaysia is a multi-ethnicity country where there were Malay, Chinese, Indian, and others. It would be better if in the future, all the ethnic can be include in the study.

Thirdly was the use of one school location as study location. Putrajaya consists of 9 boarding schools. SMK Putrajaya Presint 16 (1) has a high number of students. However, it was not representative enough for the whole Putrajaya.

In addition, for the eating companion, in this study, the frequency of having meal with the companies was not measured since it was just asking the common people they have meal with as compared with previous study, they have utilized the frequency in order to measure the family meal. Perhaps in the future study, the family meal frequency can be assessed so that it can be compared with other findings and the pattern of family meal among adolescents can be seen.

REFERENCES

Aalto-Setälä, T., Marttunen, M., Tuulio-Henriksson, A., Poikolainen, K., & Lönnqvist, J. (2002). Depressive symptoms in adolescence as predictors of early adulthood depressive disorders and maladjustment. *American Journal of Psychiatry*, *159*(7), 1235-1237.

Adeniyi, A. F., Okafor, N. C., & Adeniyi, C. Y. (2011). Depression and physical activity in a sample of nigerian adolescents: levels, relationships and predictors. *Child Adolesc Psychiatry Ment Health*, *5*(1), 16.

Ahn, S., & Fedewa, A. L. (2011). A meta-analysis of the relationship between children's physical activity and mental health. *Journal of pediatric psychology*, jsq107.

APA (American Psychiatric Association) (1994) *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn *(DSM-IV)*. APA: Washington, DC.

Arbour-Nicitopoulos, K. P., Faulkner, G. E., & Irving, H. M. (2012). Multiple health-risk behaviour and psychological distress in adolescence. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *21*(3), 171.

Background of Putrajaya retrieved from http://www.ppj.gov.my/portal/page?_pageid=311,1&_dad=portal&_schema=PORTAL#1234 on 24th September 2014

Bamber, D. J., Stokes, C. S., & Stephen, A. M. (2007). The role of diet in the prevention and management of adolescent depression. *Nutrition Bulletin*, *32*(s1), 90-99.

Belfer, M. L. (2008). Child and adolescent mental disorders: the magnitude of the problem across the globe. *Journal of Child Psychology and Psychiatry*, *49*(3), 226-236.

Benton, D., Griffiths, R., & Haller, J. (1997). Thiamine supplementation mood and cognitive functioning. *Psychopharmacology*, *129*(1), 66-71.

Bornstein, S. R., Schuppenies, A., Wong, M. L., & Licinio, J. (2006). Approaching the shared biology of obesity and depression: the stress axis as the locus of gene–environment interactions. *Molecular psychiatry*, *11*(10), 892-902.

Brown, J. S., Meadows, S. O., & Elder Jr, G. H. (2007). Race-ethnic inequality and psychological distress: Depressive symptoms from adolescence to young adulthood. *Developmental Psychology*, *43*(6), 1295.

Child health USA 2011 retrieved from http://mchb.hrsa.gov/chusa11/hstat/hsa/pages/229am.html on 14 November 2014

Chin, Y. S., & Mohd Nasir, M. T. (2009). Eating behaviors among female adolescents in Kuantan district, Pahang, Malaysia. *Pakistan Journal of Nutrition*, *8*(4), 425-432.

Cohen, S. (2004). Social relationships and health. *American psychologist*, *59*(8), 676.

Cortese, S., Falissard, B., Angriman, M., Pigaiani, Y., Banzato, C., Bogoni, G., ... & Maffeis, C. (2009). The relationship between body size and depression symptoms in adolescents. *The Journal of pediatrics*, *154*(1), 86-90.

Costello, E. J., Egger, H., & Angold, A. (2005). 10-year research update review: the epidemiology of child and adolescent psychiatric disorders: I. Methods and public health burden. *Journal of the American Academy of Child & Adolescent Psychiatry*, *44*(10), 972-986.

Craft, L. L., & Perna, F. M. (2004). The benefits of exercise for the clinically depressed. *Primary care companion to the Journal of clinical psychiatry*, *6*(3), 104.

Dan, S. P., Mohd Nasir, M. T., & Zalilah, M. S. (2011). Determination of factors associated with physical activity levels among adolescents attending school in Kuantan, Malaysia. *Malaysia Journal of Nutrition*, 17(2), 175-187.

Eisenberg, M. E., Olson, R. E., Neumark-Sztainer, D., Story, M., & Bearinger, L. H. (2004). Correlations between family meals and psychosocial well-being among adolescents. *Archives of pediatrics & adolescent medicine*, *158*(8), 792-796.

Elgar, F. J., Craig, W., & Trites, S. J. (2013). Family dinners, communication, and mental health in Canadian adolescents. *Journal of Adolescent Health*, *52*(4), 433-438.

Eskin, M., Ertekin, K., Harlak, H., & Dereboy, C. (2008). Prevalence of and factors related to depression in high school students. *Turk Psikiyatri Derg*, *19*, 382-389.

Fletcher, J. M. (2008). Adolescent depression: diagnosis, treatment, and educational attainment. *Health Economics*, *17*(11), 1215-1235

Fulkerson, J. A., Sherwood, N. E., Perry, C. L., Neumark-Sztainer, D., & Story, M. (2004). Depressive symptoms and adolescent eating and health behaviors: a multifaceted view in a population-based sample. *Preventive medicine*, *38*(6), 865-875.

Fulkerson, J. A., Kubik, M. Y., Story, M., Lytle, L., & Arcan, C. (2009). Are there nutritional and other benefits associated with family meals among at-risk youth?. *Journal of Adolescent Health*, *45*(4), 389-395.

Garrison, C. Z., Addy, C. L., Jackson, K. L., McKeown, R. E., & Waller, J. L. (1992). Major depressive disorder and dysthymia in young adolescents. *American Journal of Epidemiology*, *135*(7), 792-802.

Goodman, E., Huang, B., Wade, T. J., & Kahn, R. S. (2003). A multilevel analysis of the relation of socioeconomic status to adolescent depressive symptoms: does school context matter?. *The Journal of pediatrics*, *143*(4), 451-456.

Gore, F. M., Bloem, P. J., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., ... & Mathers, C. D. (2011). Global burden of disease in young people aged 10–24 years: a systematic analysis. *The Lancet*, *377*(9783), 2093-2102.

Gore, S., & Aseltine Jr, R. H. (2003). Race and ethnic differences in depressed mood following the transition from high school. *Journal of Health and Social Behavior*, 370-389.

Hawton, K., Saunders, K. E., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *The Lancet*, *379*(9834), 2373-2382

Herva, A., Laitinen, J., Miettunen, J., Veijola, J., Karvonen, J. T., Läksy, K., & Joukamaa, M. (2006). Obesity and depression: results from the longitudinal Northern Finland 1966 Birth Cohort Study. *International journal of obesity*, *30*(3), 520-527.

Hong, X., Li, J., Xu, F., Lap, A. T., Liang, Y., Wang, Z., ... & Griffiths, S. (2009). Physical activity inversely associated with the presence of depression among urban adolescents in regional China. *BMC public health*, *9*(1), 148.

Jaycox, L. H., Stein, B. D., Paddock, S., Miles, J. N., Chandra, A., Meredith, L. S., ... & Burnam, M. A. (2009). Impact of teen depression on academic, social, and physical functioning. *Pediatrics*, *124*(4), e596-e605.

Kaplan, S. L., Nussbaum, M., Skomorowsky, P., Shenker, I. R., & Ramsey, P. (1980). Health habits and depression in adolescence. *Journal of youth and adolescence*, *9*(4), 299-304.

Kaur, J., Cheong, S. M., Naidu, B. M., Kaur, G., Manickam, M., Noor, M. M., ... & Rosman, A. (2014). Prevalence and correlates of depression among adolescents in Malaysia. *Asia Pacific journal of public health*, 1010539514544356.

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., ... & Rahman, A. (2011). Child and adolescent mental health worldwide: evidence for action. *The Lancet*, *378*(9801), 1515-1525.

Kim, O., & Kim, K. (2001). Body weight, self-esteem, and depression in Korean female adolescents. *ADOLESCENCE-SAN DIEGO-*, *36*, 315-322.

Kowalski, K. C., Crocker, P. R., & Donen, R. M. (2004). The physical activity questionnaire for older children (PAQ-C) and adolescents (PAQ-A) manual. *College of Kinesiology, University of Saskatchewan*, *87*.

Kulkarni, A. A., Swinburn, B. A., & Utter, J. (2014). Associations between diet quality and mental health in socially disadvantaged New Zealand adolescents. *European journal of clinical nutrition*.

Kraus, M., & Karaman, T. (2013). Parameters of education and the course of depression: An analysis in the Turkish sociocultural context. *International Journal of Social Psychiatry*, *59*(4), 318-331.

Lien, L. (2007). Is breakfast consumption related to mental distress and academic performance in adolescents?. *Public health nutrition*, *10*(04), 422-428.

Lovibond, S.H. & Lovibond, P.f. (1995). Manual for the Depression anxiety Stress Scales. (2nd Ed) Sydney: Psychology Foundation.

Luppino, F. S., de Wit, L. M., Bouvy, P. F., Stijnen, T., Cuijpers, P., Penninx, B. W., & Zitman, F. G. (2010). Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. *Archives of general psychiatry*, *67*(3), 220-229.

Markowitz, S., Friedman, M. A., & Arent, S. M. (2008). Understanding the relation between obesity and depression: Causal mechanisms and implications for treatment. Clinical Psychology: Science and Practice, 15, 1–20.

Mental health: strengthening our response retrieved from http://www.who.int/mediacentre/factsheets/fs220/en/ on 17th September 2014.

Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*(10), 980-989.

Merten, M. J., Wickrama, K. A. S., & Williams, A. L. (2008). Adolescent obesity and young adult psychosocial outcomes: Gender and racial differences. *Journal of Youth and Adolescence*, *37*(9), 1111-1122.

Mikolajczyk, R. T., El Ansari, W., & Maxwell, A. E. (2009). Food consumption frequency and perceived stress and depressive symptoms among students in three European countries. *Nutr J*, *8*(1), 31.

Miller, B., & Taylor, J. (2012). Racial and socioeconomic status differences in depressive symptoms among Black and White youth: An examination of the mediating effects of family structure, stress and support. *Journal of youth and adolescence*, *41*(4), 426-437.

Mortality, morbidity and disability in adolescence retrieved from http://apps.who.int/adolescent/second-decade/section3/page2/mortality.html 0n 14 November 2014

Musick, K., & Meier, A. (2012). Assessing causality and persistence in associations between family dinners and adolescent well-being. *Journal of marriage and family*, *74*(3), 476-493.

Nabkasorn, C., Miyai, N., Sootmongkol, A., Junprasert, S., Yamamoto, H., Arita, M., & Miyashita, K. (2006). Effects of physical exercise on depression, neuroendocrine stress hormones and physiological fitness in adolescent females with depressive symptoms. *The European Journal of Public Health*, *16*(2), 179-184.

Nurashikin I. Healthy Mind Programme in School. Paper presented at 1st World Congress on Healthy Ageing 2012 in Kuala Lumpur Convention Center on 20th March 2012.

Nurashikin I. (2013). *Mental health in Malaysia – Issues and challenges: Public health perspective*. Retrieved from http://jknkelantan.moh.gov.my/khc2013/uploads/pdfs/symp_05-02.pdf

O'Sullivan, T. A., Robinson, M., Kendall, G. E., Miller, M., Jacoby, P., Silburn, S. R., & Oddy, W. H. (2009). A good-quality breakfast is associated with better mental health in adolescence. *Public health nutrition*, *12*(02), 249-258.

Quatromani, P. A., Copenhafer, D. L., D'AGOSTINO, R. B., & Millen, B. E. (2002). Dietary patterns predict the development of overweight in women: The Framingham Nutrition Studies. *Journal of the American Dietetic Association*, *102*(9), 1239-1246.

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *The Lancet*, *369*(9569), 1302-1313.

Pine, D. S., Cohen, E., Cohen, P., & Brook, J. (2014). Adolescent depressive symptoms as predictors of adult depression: moodiness or mood disorder?.

Rawana, J. S., Morgan, A. S., Nguyen, H., & Craig, S. G. (2010). The relation between eating and weight-related disturbances and depression in adolescence: a review. *Clinical child and family psychology review*, *13*(3), 213-230.

Reeves, G. M., Postolache, T. T., & Snitker, S. (2008). Childhood obesity and depression: connection between these growing problems in growing children. *International journal of child health and human development: IJCHD*, *1*(2), 103.

Rothon, C., Edwards, P., Bhui, K., Viner, R. M., Taylor, S., & Stansfeld, S. A. (2010). Physical activity and depressive symptoms in adolescents: a prospective study. *Biomed Central Medicine*,*8*(1), 32.

Sanchez-Villegas, A., & Martínez-González, M. A. (2013). Diet, a new target to prevent depression?. *Biomed Central medicine*, *11*(1), 3.

Senarai Sekolah Menengah di Wilayah Persekutuan Putrajaya retrieved from http://emisportal.moe.gov.my/emis/emis2/emisportal2/doc/fckeditor/File/senarai_sek_09/rendah/wpPutrajayaR.pdf on 24th September 2014

Simeon, D. T., & Grantham-McGregor, S. M. (1990). Nutritional deficiencies and children's behaviour and mental development. *Nutrition Research Reviews*, *3*(01), 1-24.

Stunkard, A. J., Faith, M. S., & Allison, K. C. (2003). Depression and obesity. *Biological psychiatry*, *54*(3), 330-337.

Swallen, K. C., Reither, E. N., Haas, S. A., & Meier, A. M. (2005). Overweight, obesity, and health-related quality of life among adolescents: the National Longitudinal Study of Adolescent Health. *Pediatrics*, *115*(2), 340-347.

Tanihata, T., Kanda, H., Osaki, Y., Ohida, T., Minowa, M., Wada, K., ... & Hayashi, K. (2012). Unhealthy lifestyle, poor mental health, and its correlation among adolescents: a nationwide cross-sectional survey. *Asia-Pacific journal of public health*, 1010539512452753.

Thapar, A., Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *The Lancet*, *379*(9820), 1056-1067.

Toh, C. L., Ding, L. M., & Peng, R. (1997). Psychiatric morbidity in children and adolescents. *Public Health Institute, Ministry of Health: Malaysia*.

UNICEF. (2012). Progress for Children: A Report Card on Adolescents. New York:UNICEF.

Wardle, J., & Cooke, L. (2005). The impact of obesity on psychological well-being. *Best Practice & Research Clinical Endocrinology & Metabolism*, *19*(3), 421-440.

Wesnes, K. A., Pincock, C., Richardson, D., Helm, G., & Hails, S. (2003). Breakfast reduces declines in attention and memory over the morning in schoolchildren. *Appetite*, *41*(3),329-331.

Wickrama, K. A. S., Noh, S., & Elder, G. H. (2009). An investigation of family SES-based inequalities in depressive symptoms from early adolescence to emerging adulthood. *Advances in life course research*, *14*(4), 147-161.

Wight, R. G., Botticello, A. L., & Aneshensel, C. S. (2006). Socioeconomic context, social support, and adolescent mental health: A multilevel investigation. *Journal of Youth and Adolescence*, *35*(1), 109-120.

Wiles, N. J., Jones, G. T., Haase, A. M., Lawlor, D. A., Macfarlane, G. J., & Lewis, G. (2008). Physical activity and emotional problems amongst adolescents. *Social psychiatry and psychiatric epidemiology*, *43*(10), 765-772.

Windfuhr, K., While, D., Hunt, I., Turnbull, P., Lowe, R., Burns, J., ... & Kapur, N. (2008). Suicide in juveniles and adolescents in the United Kingdom. *Journal of child psychology and psychiatry*, *49*(11), 1155-1165.

World Health Organization. (2008). *The global burden of disease: 2004 update*. Geneva: Author.

APPENDICES

APPENDIX A

ETHICS APPROVAL FROM ETHICS COMMITTEE FOR RESEARCH INVOLVING HUMAN SUBJECTS OF UPM (JKEUPM)

Attachment 2

JKEUPM Ref No. : FPSK(EXP14-nutrition)U017

a) Members of the JKEUPM who reviewed the documents:
- Assoc. Prof. Dr. Noritah Omar

b) Date of approval: 15/1/2015

Endorsed at JKEUPM Meeting on **6/2/2015**, attended by:

NAME	DESIGNATION	GENDER	TICK IF PRESENT
Prof. Dr. Norlijah Othman	Paediatrics& Dean, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr Zamberi Sekawi	Medical Microbiologist & Deputy Dean of Research and Internationalization, Faculty of Medicine and Health Sciences	Male	√
Prof. Dato' Dr. Lye Munn Sann	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Tengku Aizan Abd Hamid	Gerontologist & Director, Institute of Gerontology	Female	
Prof. Dr. Lekhraj Rampal	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Lim Thiam Aun	Anesthesiologist, Dept of Surgery, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Patimah Ismail	Professor of Biomedicine, Dept of Biomedical Sciences, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Johnson Stanslas	Pharmacologist, Dept of Medicine, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Sherina Mohd.Sidik	Professor of Medical, Department of Psychiatry, Faculty of Medicine and Health Sciences	Female	
Assoc. Prof. Dr. Mansor Abu Talib	Assoc. Professor of Guidance and Counselling, Dept of Human Development and Family Studies, Faculty of Human Ecology	Male	
Assoc. Prof. Dr. Hejar Abd.Rahman	Assoc. Professor of Public Health / Head Of Unit, Department of Community Health, Faculty of Medicine and Health Sciences	Female	√
Assoc. Prof. Dr. Normala Ibrahim	Assoc. Professor of Psychiatry, Department of Psychiatry, Faculty of Medicine and Health Sciences	Female	√
Dr. Salmiah Md. Said	Lecturer of Epidemiology, Medical Statistics, Department of Community Health, Faculty of Medicine and Health Sciences	Female	
Assoc. Prof. Dr. Noritah Omar (Lay Person)	Assoc. Professor of English Language, Dept of English Language, Faculty of Communication and Modern Languages	Female	
Dr. Rojanah Kahar (Lay Person)	Senior Lecturer of Dept of Human Development and Family Studies, Faculty of Human Ecology	Female	√
Tan Sri Dato' Napsiah Omar (Independent Member)	Chairman, National Population and Family Development Board	Female	√

APPENDIX B

PERMISSION REQUEST LETTER FROM MINISTRY OF EDUCATION

s.k

Pengarah
Jabatan Pendidikan Wilayah Persekutuan Putrajaya

APPENDIX C

PERMISSION REQUEST LETTER FROM DEPARTMENT OF EDUCATION WILAYAH PERSEKUTUAN PUTRAJAYA (JPWP)

APPENDIX D

INFORMATION SHEET

JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG, SELANGOR, MALAYSIA

BORANG B2: PENERANGAN DAN PERSETUJUAN IBUBAPA/PENJAGA

Sila baca maklumat berikut dengan teliti. Sekiranya anda mempunyai sebarang pertanyaan, sila kemukakan kepada penyelidik.

1.TAJUK KAJIAN

Status berat badan, tingkahlaku pemakanan, tahap aktiviti fizikal dan risiko kemurungan dalam kalangan remaja sekolah menengah di Putrajaya.

2. PENGENALAN

Kemurungan adalah salah satu komponen kesihatan mental. Kemurungan dalam kalangan remaja tidak akan terhenti jika tidak dirawat sehingga mereka meningkat dewasa. Ia boleh berlaku pada bila-bila masa tanpa disedari malah boleh terjadi dengan lebih teruk jika tidak dikawal. Oleh itu, pemahaman tentang faktor-faktor yang menyebabkan risiko kemurungan adalah penting dalam memastikan kualiti kesihatan mental remaja masa kini dalam keadaan baik. Penyelidikan ini diperlukan untuk mengenalpasti perkaitan di antara tingkah laku pemakanan, status berat badan, tahap aktiviti fizikal dan risiko kemurungan dalam kalangan remaja di Putrajaya.

3. APAKAH YANG PERLU ANDA LAKUKAN?

Kebenaran daripada ibu bapa adalah amat diperlukan bagi para pelajar untuk menyertai penyelidikan ini. Anak tuan/puan hanya perlu memberi kerjasama kepada penyelidik untuk mengambil ukuran tinggi dan berat serta mengisi borang soal selidik yang disediakan.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Bagi pelajar sekolah menengah yang tidak memenuhi kriteria iaitu warganegara Malaysia, berumur 12 hingga 15 tahun dan menetap di Putrajaya mereka akan dikecualikan daripada penyelidikan ini. Bagi pelajar yang tidak mendapat persetujuan daripada ibu bapa, telah didiagnos kemurungan, berpenyakit kronik dan kecacatan fizikal juga akan dikecualikan.

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANAK/JAGAAN SAYA SEBAGAI PESERTA?

Maklumat berkenaan ukuran berat, tingi dan Indeks Jisim Tubuh dapat diketahui melalui penyertaan dalam penyelidikan ini. Sekiranya anak tuan/puan diadapati mempunyai risiko kemurungan, pihak kami akan maklumkan kemudian supaya pihak tuan/puan boleh mendapatkan rawatan lanjut.

b)KEPADA PENYELIDIK?
Melalui penyertaan dalam penyelidikan ini, ia dapat meningkatkan pemahaman tentang tingkah laku pemakanan, status berat badan, tahap aktiviti fizikal dan risiko kemurungan dalam kalangan remaja seterusnya menyumbang maklumat kepada status kesihatan mental remaja di Malaysia. Dengan itu, serba sedikit faktor yang berkaitan dengan risiko kemurungan dalam kalangan remaja dapat diketahui.

6. ADAKAH IA BERISIKO?
Tiada risiko yang dikenalpasti dengan melibatkan diri di dalam program ini memandangkan tiada kaedah yang invasif atau berbahaya digunakan.

7. ADAKAH MAKLUMAT DAN IDENTITI ANAK/JAGAAN SAYA KEKAL RAHSIA?
Maklumat yang diberi di dalam program ini akan **dirahsiakan** dan hanya akan digunakan untuk tujuan penyelidikan.

8. SIAPA YANG SAYA PERLU HUBUNGI SEKIRANYA SAYA MEMPUNYAI SOALAN TAMBAHAN SEPANJANG PENYELIDIKAN INI?

Jika ada sebarang pertanyaan tentang program ini, tuan/puan boleh hubungi Nurul Wahidah bt Abd Rashid melalui email hadihawwahidah@gmail.com atau ditalian 019-5008189.

Sila tandatangan di sini sekiranya anda telah membaca dan memahami kandungan halaman ini

APPENDIX E

CONSENT FORM

PERSETUJUAN

Saya..... No Kad Pengenalan.....
beralamat.....
.....dengan ini secara sukarela bersetuju/tidak bersetuju membenarkan *anak / jagaan saya ..... menyertai **penyelidikan tersebut di atas *(temuduga/ soal selidik).**

Saya telah diberi penjelasan secara menyeluruh mengenai penyelidikan ini dari segi metodologi, risiko dan komplikasi (seperti yang tercatat dalam Helaian Penerangan). Saya memahami bahawa *anak / jagaan saya berhak menarik diri dari penyelidikan ini pada bila-bila masa tanpa memberi sebarang alasan.Saya juga memahami bahawa sebarang maklumat yang berkaitan identiti *anak / jagaan saya akan dirahsiakan.

Saya* berminat / tidak berminat untuk mengetahui keputusan kajian yang **melibatkan** *anak / jagaan saya.

I setuju/tidak bersetuju untuk imej/gambar/rakaman video/ rakaman suara berkaitan dengan anak/ jagaan saya digunakan dalam apa jua bentuk penerbitan atau pembentangan. (sekiranya berkaitan).

*potong yang tidak berkenaan

Tandatangan ..... Tandatangan.....
(*Ibubapa/ Penjaga*) (*Saksi*)

Tarikh :..... Nama :.....

No. K/P: .....

Saya mengesahkan bahawa saya telah menerangkan kepada ibubapa/penjaga responden mengenai sifat dan tujuan penyelidikan tersebut di atas.

Tarikh ..... Tandatangan.....
(*Penyelidik*)

APPENDIX F

QUESTIONNAIRE

UPM

UNIVERSITI PUTRA MALAYSIA

BERILMU BERBAKTI

TINGKAHLAKU PEMAKANAN, STATUS BERAT BADAN, TAHAP AKTIVITI FIZIKAL DAN RISIKO KEMURUNGAN DALAM KALANGAN PELAJAR SEKOLAH MENENGAH DI WILAYAH PERSEKUTUAN PUTRAJAYA

NAMA PENYELIDIK: NURUL WAHIDAH

NOTA: Semua maklumat yang telah anda berikan adalah untuk tujuan penyelidikan sahaja dan akan dirahsiakan. Oleh itu, kejujuran dan kerjasama anda adalah amat diperlukan ketika mengisi borang soal selidik ini. Terima kasih.

BAHAGIAN A: LATAR BELAKANG SOSIODEMOGRAFIK

Tarikh lahir: ____/____/_____ Umur: _____

Jantina:
- ☐ Lelaki
- ☐ Perempuan

Bangsa
- ☐ Melayu
- ☐ Cina
- ☐ India
- ☐ Lain-lain, nyatakan:_____

Agama:
- ☐ Islam
- ☐ Buddha
- ☐ Hindu
- ☐ Kristian
- ☐ Lain-lain, nyatakan:_____

Maklumat ibu bapa atau penjaga:

BAPA/PENJAGA	**IBU/PENJAGA**
Umur:	**Umur:**
Pekerjaan:	**Pekerjaan:**
Tahap pendidikan: ☐ Sekolah rendah ☐ Sekolah menengah ☐ STPM/Pre-U/Diploma ☐ Ijazah/Master/PHD	**Tahap pendidikan:** ☐ Sekolah rendah ☐ Sekolah menengah ☐ STPM/Pre-U/Diploma ☐ Ijazah/Master/PHD
Jumlah pendapatan isi rumah: RM _____	

BAHAGIAN B: SOAL SELIDIK TINGKAHLAKU PEMAKANAN

SKALA	1	2	3	4	5	6
MAKSUD	Setiap hari	4-5 hari seminggu	2-3 hari seminggu	Sekali seminggu	1-3 kali seminggu	Tidak pernah/ kurang daripada sekali sebulan

Berikut adalah soalan mengenai tingkah laku makan anda. Sila pilih satu jawapan dan bulatkannya.

No	Kenyataan	Skala
1a	Berapa kerapkah anda mengambil sarapan pagi?	1 2 3 4 5 6
1b	Berapa kerapkah anda mengambil minum pagi?	1 2 3 4 5 6
1c	Berapa kerapkah anda mengambil makan tengahari?	1 2 3 4 5 6
1d	Berapa kerapkah anda mengambil minum petang?	1 2 3 4 5 6
1e	Berapa kerapkah anda mengambil makan malam?	1 2 3 4 5 6
1f	Berapa kerapkah anda mengambil makan lewat malam?	1 2 3 4 5 6
2	Sila nyatakan 3 jenis makanan atau minuman utama yang biasa anda ambil di antara waktu masa makan utama (seperti teh, susu, kuih-muih, aiskrim, buah-buahan, snek bungkusan, pisang goreng dan lain-lain lagi) dan kekerapan pengambilannya.	
	i.	1 2 3 4 5 6
	ii.	1 2 3 4 5 6
	iii.	1 2 3 4 5 6

3	Berapa kerapkah anda makan di medan selera, kedai kopi, atau gerai makanan?	1	2	3	4	5	6
4	Berapa kerapkah anda makan di restoran makanan barat (seperti KFC, McDonald's, Pizza Hut dan lain-lain)?	1	2	3	4	5	6
5	Berapa kerapkah anda membungkus/membeli dengan penghantaran (delivery) makanan dari restoran makan barat (seperti KFC, McDonald's, Pizza Hut dan lain-lain)?	1	2	3	4	5	6

6. Siapakah yang biasanya makan bersama anda?

- ☐ Ahli keluarga saya
- ☐ Rakan-rakan saya
- ☐ Bersendirian
- ☐ Lain-lain, sila nyatakan:_____

7. Yang manakah pernyataan berikut paling tepat menggambarkan pengambilan makanan anda? (Sila pilih satu jawapan)

- ☐ Saya menjaga pengambilan makanan saya dengan mengurangkan makanan tinggi lemak dan gula.
- ☐ Saya menjaga pengambilan makanan saya dengan mengurangkan makanan yang tinggi lemak, manis dan juga daging merah (seperti daging lembu dan kambing).
- ☐ Saya menjaga pengambilan makanan saya dengan mengurangkan makanan yang tinggi lemak.
- ☐ Saya seorang vegetarian.
- ☐ Saya sedang mengambil menu berdiet tertentu untuk mengurangkan berat badan.
- ☐ Saya mencuba kurangkan makan untuk mengurangkan berat badan walaupun saya tiada menu berdiet tertentu.
- ☐ Saya tidak memilih jenis makanan dan makan apa sahaja yang ada.
- ☐ Tiada satu pernyataan di atas adalah tepat bagi pengambilan makanan saya. Sila nyatakan pengambilan sajian anda:

_____

BAHAGIAN C: TAHAP AKTIVITI FIZIKAL

Kami sedang berusaha mengetahui aktiviti fizikal anda pada 7 hari yang lalu (minggu lepas). Aktiviti fizikal yang dimaksudkan disini ialah termasuk tarian atau senaman yang membuatkan anda berpeluh atau kaki anda lenguh, atau permainan yang membuatkan anda bernafas dengan kuat seperti melompat tali, berlari, memanjat dan lain-lain.

Peringatan:

- Soalan berikut tiada soalan yang betul atau salah. Ini bukan ujian
- Sila jawab dengan jujur dan tepat. Ini amat penting.

1. Aktiviti fizikal masa lapang: Adakah anda membuat aktiviti berikut pada 7 hari lalu (minggu lepas)? Jika ya, berapa kali? (sila tandakan (/) satu sahaja pada setiap aktiviti)

Bil	Aktiviti	Tiada	1-2	3-4	5-6	7 kali atau lebih
1	Melompat tali					
2	Kayak					
3	Skating					
4	Berjalan untuk bersenam					
5	Berbasikal					
6	Jogging atau berlari					
7	Aerobic					
8	Berenang					
9	Baseball, softball					
10	Menari					
11	Rugbi					
12	Badminton					
13	Papan luncur					
14	Bola sepak					
15	Hoki					
16	Bola tampar					
17	Bola keranjang					
18	Luncur ais					
19	Lain-lain, Nyatakan:					

2. Pada 7 hari yang lepas, semasa kelas Pendidikan Jasmani (PJ) anda, berapa aktif anda berlari berlari bersungguh-sungguh, melompat? Tandakan satu sahaja.

Saya tidak menghadiri kelas PJ	
Jarang	
Kadang kala	
Sering kali	
Selalu	

3. Pada 7 hari yang lepas, apakah perkara biasa yang anda lakukan semasa makan tengahari? (selain makan)? (Sila tandakan pada satu kotak sahaja)

Duduk (bercakap, membaca, membuat kerja sekolah)	
Berdiri atau berjalan-jalan	
Berlari atau bermain sedikit	
Berlari atau bermain agak sedikit	
Kebanyakan masa berlari atau bermain	

4.Pada 7 hari yang lepas, berapa hari anda membuat senaman, tarian atau bermain permainan secara sangat aktif selepas waktu sekolah?

Tiada	
1 kali	
2 atau 3 kali	
4 kali	
5 kali	

5.Pada 7 hari yang lepas, berapa hari anda membuat senaman, tarian atau bermain permainan secara sangat aktif pada waktu petang?

Tiada	
2 kali	
2 atau 3 kali	
4 kali	
6 kali	

6.Pada hujung minggu yang lepas, berapa hari anda membuat senaman, tarian atau bermain permainan secara sangat aktif?

Tiada	
3 kali	
2 atau 3 kali	
4 kali	
7 kali	

7.Antara yang berikut, yang manakah paling sesuai anda pada 7 hari yang lalu? Pilih salah **SATU** pernyataan dibawah sahaja.

Pada waktu lapang, kebanyakannya saya gunakan untuk melakukan aktiviti fizikal yang ringan.	
Saya jarang (1 – 2 kali) membuat aktiviti fizikal pada waktu lapang (contoh: bersenam, berlari, berenang, berbasikal, senamrobik)	
Saya sering melakukan aktiviti fizikal pada waktu lapang (3 – 4 kali seminggu)	
Saya sering kali melakukan aktiviti fizikal pada waktu lapang (5 – 6 kali seminggu)	
Saya selalunya melakukan aktiviti fizikal pada waktu lapang (7 kali dan lebih dalam seminggu)	

8. Tandakan seberapa kerap anda membuat aktiviti fizikal pada setiap hari pada minggu lepas? (bermain, berlari dan lain-lain)

Hari	Tiada	Jarang	Kadang-kadang	Kerap	Sangat kerap
Isnin					
Selasa					
Rabu					
Khamis					
Jumaat					
Sabtu					
Ahad					

9.Pada minggu lepas, adakah anda jatuh sakit atau apa-apa yang menghalang anda daripada melakukan aktiviti fizikal? (Tandakan salah satu)

Tiada	
Ada. Apakah yang menghalang anda?	

BAHAGIAN D: TANDA-TANDA KEMURUNGAN (DASS 21)

Sila baca setiap kenyataan dan bulatkan jawapan (skala markah 0,1,2,3) menggambarkan keadaan anda SEMINGGU YANG LEPAS. Tidak ada jawapan betul atau salah. JANGAN guna terlalu banyak masa untuk mana-mana kenyataan.

Skala markah adalah seperti berikut:

0	1	2	3
Tidak pernah sama sekali	**Jarang**	**Kerap**	**Sangat kerap**

Kenyataan adalah seperti berikut:

Bil	Soalan	Tidak pernah	Jarang	Kerap	Sangat kerap
1	Saya rasa susah untuk bertenang	0	1	2	3
2	Saya sedar mulut saya rasa kering	0	1	2	3
3	Saya seolah-olah tidak dapat mengalami perasaan positif sama sekali	0	1	2	3
4	Saya mengalami kesukaran bernafas (contohnya, bernafas terlalu cepat, tercungap-cungap walaupun tidak melakukan aktiviti fizikal)	0	1	2	3
5	Saya rasa tidak bersemangat untuk memulakan sesuatu keadaan	0	1	2	3
6	Saya cenderung bertindak secara berlebihan kepada sesuatu keadaan	0	1	2	3
7	Saya pernah menggeletar (contohnya tangan)	0	1	2	3
8	Saya rasa saya terlalu gelisah	0	1	2	3
9	Saya risau akan berlaku keadaan dimana saya panic dan berkelakuan bodoh	0	1	2	3
10	Saya rasa tidak ada apa yang saya harapkan (putus harapan)	0	1	2	3
11	Saya dapati saya mudah resah	0	1	2	3
12	Saya merasa sukar untuk reflex	0	1	2	3
13	Saya rasa muram dan sedih	0	1	2	3
14	Saya tidak boleh terima apa jua yang menghalangi saya daripada meneruskan apa yang saya sedang lakukan	0	1	2	3
15	Saya rasa hampir panik	0	1	2	3

16	Saya tidak bersemangat langsung	0	1	2	3
17	Saya rasa diri saya tidak berharga	0	1	2	3
18	Saya mudah tersinggung	0	1	2	3
19	Walaupun saya tidak melakukan aktiviti fizikal saya sedar akan debaran jantung saya (contoh degupan jantung lebih cepat)	0	1	2	3
20	Saya rasa takut tanpa sebab	0	1	2	3
21	Saya rasa hidup ini tidak bererti lagi	0	1	2	3

BAHAGIAN E: UKURAN ANTHROPOMETRIK

UKURAN	BACAAN 1	BACAAN 2	PURATA
BERAT BADAN (kg)			
TINGGI (m)			

APPENDIX G

SPONSORSHIP LETTER