UNIVERSITI PUTRA MALAYSIA

ASSOCIATIONS OF SOCIODEMOGRAPHIC FACTORS, SOCIAL SUPPORT, PHYSCIAL ACTIVITY, AND DIETARY INTAKE WITH PERCEIVED STRESS AMONG PREGNANT WOMEN IN HEALTH CLINICS WILAYAH PERSEKUTUAN

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BY

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Yours Sincerely,

Farah Nurdiana Binti Borhan

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ABSTRACT

ASSOCIATIONS OF SOCIO-DEMOGRAPHIC FACTORS, SOCIAL SUPPORT, PHYSICAL ACTIVITY, AND DIETARY INTAKE WITH PERCEIVED STRESS AMONG PREGNANT WOMEN IN HEALTH CLINICS WILAYAH PERSEKUTUAN

Farah Nurdiana Borhan

This cross sectional study examined the association of socio-demographic factors, social support, physical activity and dietary intake with stress among pregnant women at health clinics in Wilayah Persekutuan. A total of 189 pregnant women with average age (29.95 ± 4.81) attending maternal and child health clinics Wilayah Persekutuan were enrolled in this study between March and April 2019. The participants completed self-administered questionnaires consists of socio-demographic information, Perceived Stress Scale (PSS-10), Multidimensional Perceived Social Support (MPSS-12), Pregnancy Physical Activity Questionnaires (PPAQ) and Food Frequency Questionnaires (FFQ). Out of 189 pregnant women, near half of the women (44.4%) were at their second trimester, followed by 41.8% and 13.8% were at their first trimester, and third trimester respectively. The total average gestational weeks was 25.46 ± 9.35. Most of the women (74.7%) had moderate and high level of stress. The total mean activity and energy intake of the pregnant women were 249.39 ± 146.58 MET-hour/week and 2283.77 ± 979.48 kcal/day respectively. Perceived social support ($r = -0.241$, $p<0.001$), fat intake ($r=0.145$, $p<0.05$) and total energy intake ($r= 0.150$, $p<0.05$) were associated with perceived stress score. Women who are having less social support, eating a lot of sugary and high fat food, were prone to have high level of stress which these factors may underlies the importance of targeting these women for intervention program to manage the stress better.

ABSTRAK

PERHUBUNGAN FAKTOR-FAKTOR SOSIO-DEMOGRAFI, SOKONGAN SOSIAL, AKTIVITI FIZIKAL DAN PENGAMBILAN DIET DENGAN TANGGAPAN TEKANAN YANG DILIHAT DI KALANGAN WANITA HAMIL DI KLINIK-KLINIK KESIHATAN WILAYAH PERSEKUTUAN

Farah Nurdiana Borhan

Kajian keratan rentas ini mengkaji perhubungan antara faktor sosio-demografi, sokongan sosial, aktiviti fizikal dan pengambilan diet dengan tanggapan tekanan di kalangan wanita hamil di klinik kesihatan di Wilayah Persekutuan. Sebanyak 189 wanita hamil dengan purata umur (29.95 ± 4.81) yang hadir di Klinik Kesihatan Ibu dan Anak (KKIA) Wilayah Persekutuan telah mengambil bahagian dalam kajian ini dan ia berlangsung antara bulan Mac dan April 2019. Borang soal selidik para responden yang siap terdiri daripada maklumat sosio-demografi, *Perceived Stress Scale* (PSS-10), *Multidimensional Perceived Social Support* (MPSS-12), *Pregnancy Physical Activity Questionnaires* (PPAQ) and *Food Frequency Questionnaires* (FFQ). Daripada 189 wanita hamil, hampir separuh daripada mereka (44.4%) berada di trimester kedua, diikuti oleh 41.8% pada trimester pertama dan 13.8% adalah pada trimester ketiga. Jumlah purata minggu kehamilan adalah 25.46 ± 9.35. Kebanyakan wanita (74.7%) didapati menghadapi tekanan tahap sederhana dan tinggi. Jumlah purata aktiviti dan pengambilan tenaga oleh wanita hamil adalah 249.39 ± 146.58 MET-jam/minggu dan 2283.77 ± 979.48 kcal/hari. Sokongan sosial ($r = -0.241$, $p<0.001$), pengambilan lemak ($r=0.145$, $p<0.05$) dan jumlah pengambilan tenaga ($r= 0.150$, $p<0.05$) adalah berkait dengan skor tekanan. Wanita yang mengalami kurang sokongan sosial, mengambil makanan yang tinggi gula dan lemak adalah mudah terjebak untuk mengalami tekanan yang tinggi. Faktor ini amat penting bagi menguruskan tekanan dengan lebih baik melalui program intervensi dikalangan wanita hamil yang mempunyai tanggapan tekanan.

CHAPTER ONE

INTRODUCTION

1.1 Background

Stress is described as a response complex genetically decided sample of response of the human physiology to a demanding situation (Pais et al., 2014). National Health and Morbidity Survey (NHMS) (2015) reported that females (30.8%) were prone to stress with higher proportions (27.6%) than males. According to National Population and Family Planning Board (LPPKN) (2017), 8.7 million of Malaysian women at reproductive age (15-49) who were at risk of getting pregnant and they were vulnerable to encounter stressful life events during pregnancy. A study stated that the prevalence of stress had been found to range from 6% to as high as 52.9% among pregnant women in developing countries (Pantha et al., 2017). Besides, van Bussel, Spitz, & Demyttenaere (2006) also reported that many of the stressed women suffered from common mental health disorder during early pregnancy and in the postpartum period.

Kelly et al. (2009) reported that high level of stress during pregnancy can influence the growth and development of the baby in the later stages of life such as smaller gestation and high incidence of preterm birth, lower in birth weight and height (Dipietro, 2012).

Additionally, woman that experienced pregnancy and childbirth was most likely affecting her role as a mother and any stress and emotional changes during pregnancy such as long-term adverse effect on herself and her child, and it may interfere with mother-infant attachment and child development (Ahsan et al., 2009). This consequences of having stress may be affected by low income background which categorized as vulnerable group who were more likely to face daily struggles (Renzaho & Oldroyd, 2014).

While in working life, women job in all categories experienced more stress than men due to the stressful life events (Boran, Shawaheen, Khader, Amarin, & Hill Rice, 2012). In Malaysia, 22.8% of working women encountered stress (Umi Adzlin et al., 2011). Multiple factors were showed to be associated with stress among working pregnant women, Delina (2013) reported that, the severity of imbalance of work-life that may be a greatest challenge that working women were encountered bigger workload and had to balance up their job and responsibilities related to home and family that can contribute to stress (Asnani, Pandey, & Sawhney, 2004). Besides, other factors such as maternal age and social support were found to associated with stress among pregnant women (Gao et al., 2017; Sia et al., 2016; Perrone-Moisés, 2015). Gao et al., (2018) reported that pregnant women who were aged 24 and below had significantly higher percentage of severe stress (44.0%) while poor partner relationship or lack of partner support was found to be strong predictor of perinatal distress in an epidemiological study in Norway (Perrone-Moisés, 2015).

1.2 Problem statement

Based on United Nation Population Division, the proportion of the population aged 15 and older was increasing and it was corresponded to the labor force participation rate which was economically active across developed and developing countries (United Nation, 2017). It showed that women at reproductive age were working and this group were fertile and may get pregnant while joining labor force. As reported by National Population and Family Development Board Malaysia (NPFDB) (2017), there were 56.2% out of 16 million Malaysian women were at reproductive age and 15.6% of them were head of household for their family. Department of Statistics Malaysia reported that, labor force participation rate (LFPR) was rising in female range between 54.3% in 2016 to 54.7% in 2017. These percentages were contributed from female age groups namely 25–34 (74.0%), 35–44 (67.5%) and 45–54 (57.1%) while reproductive age was starting from 15-49 years as reported in National Health and Morbidity Survey (NHMS) 2016. Global study by Mental Health Foundation 2018 reported that, 74% of United Kingdom population encountered stress and they were unable to cope. However, in Malaysia, 29.2% of adult population perceived stress in 2015 based on NHMS (2015). Thus, pregnant women who were working may encounter stress more due to possible factors.

Women who were distressed can lead to other mental health problems such as anxiety and postpartum depression. Cohort study in Sabah showed that the prevalence of postpartum depression among mothers was 14.3% within first 6 month postpartum (Mohamad Yusuff, Tang, Binns, & Lee, 2015) while in General Hospital of Kuala Lumpur showed

that postnatal depression range between 3.9% to 22.8% (Azidah, Shaiful, Rusli, & Jamil, 2006; Besar, 2002; Grace, Lee, Ballard, & Herbert, 2001). Poor prenatal and postnatal mental health were associated with the increased risk of early neonatal outcome such as pre-term birth and reduce maternal-infant attachment (Hobel, Goldstein, & Barrett, 2008). Besides, rushing lifestyle and gestational fatigue may be harmful for baby and mother (Okun, Kline, Roberts, & Wettlaufer, 2013). Thus, early detection of stress level was needed to prevent depression among at risk populations (CDC, 2012; Hübner-Liebermann, Hausner, & Wittmann, 2012).

Multiple factors were found to be associated with stress among pregnant women. Lower socio-economic status, lack of family support and lower level of education, failure in coping maternal stress were found to be associated with mental health problems during pregnancy (Nagandla et al., 2016; Kingston, Heaman, Fell, Dzakpasu, & Chalmers, 2012; Woods, Melville, Guo, Fan, & Gavin, 2011). Having better social support showed to help women to cope with stress during pregnancy (Anna, Heather, Derrick, Linda, Urania and Trace, 2015; Lau & Yin, 2011). This was supported by Aqeel et al. (2018), whereas stress among working women reduced when they received social support from family and friends support. Moreover, Lau & Yin (2011) reported that pregnant women who were younger (less than 25 years old) had higher perceived stress level compared to older pregnant women. In contrary, Silveira, Pekow, Dole, Markenson, & Chasan-taber (2013) reported that older maternal age were showed to be more stress compared to younger one. Besides, pregnant women who came from primary education background were prone to have stress compared to higher education level (Pantha et al., 2017).

There was limited findings from previous study, where stress in pregnant women are either affected by the intensity of physical activity or by only being physically active (Poudevigne & Connor, 2006). However, exercise is the best method to reduce stress level for pregnant women (Costa, Rippen, Dritsa, & Ring, 2003).

There were very limited studies have been done on the association between socio-demographic factors, social factors and physical activity with stress among pregnant women in Malaysia. Therefore, the purpose of this study was to determine those factors with stress among pregnant women in Malaysia.

Research question :

1. Are there any association between socio-demographic factors, social support, physical activity and dietary intake with stress among pregnant women in health clinics in Wilayah Persekutuan?

1.3 Significance of study

The proposed study is conducted to determine the association between socio-demographic factors, social support and physical activity level with perceived stress among pregnant women in health clinics in Wilayah Persekutuan. As there are less research on these four factors with stress among pregnant women in Malaysia, this study were conducted to add on new knowledge in this area.

This study also can be used as baseline information for future research. Future researchers can refer to the findings of this study to conduct any further studies related to socio-demographic, psychosocial factors, physical activity and dietary intake with stress among pregnant women in Malaysian. The findings of this study can be useful to come out with new studies that solve stress issues among pregnant women by controlling related factors.

Furthermore, the results of this study may provide new environment in research for mental health status especially intervention on stress among pregnant women. This information can be used as material to enhance the knowledge of health professionals to come up with new strategies to intervene the stress problem arises among pregnant women. When the socio-demographic, social factor, physical activity and dietary intake are found to be related with the stress, proper strategies could be implemented so that it can be conducted in future. Therefore, it will help non-government organization's (NGO) and international non-government organization's (INGO) working in health sectors to plan a program related to healthy lifestyle. This will eventually help pregnant women in Malaysia to achieve a better mental health status.

1.4 Objectives

1.4.1 General Objective

To determine the association between maternal socio demographic factors, social support, physical activity and dietary intake with perceived stress among pregnant women in health clinics in Wilayah Persekutuan.

1.4.2 Specific Objectives

1. To determine the socio-demographic characteristics (maternal age, educational level and household income), social support, physical activity and dietary intake among pregnant women in health clinics in Wilayah Persekutuan.

2. To determine prevalence of stress among pregnant women in health clinics in Wilayah Persekutuan.

3. To determine the association between socio-demographic factors, social support, physical activity and dietary intake with perceived stress among pregnant women in health clinics in Wilayah Persekutuan.

1.5 Null hypotheses

1. There is no association between socio-demographic factors (maternal age, educational level and household income) and perceived stress among pregnant women in health clinics in Wilayah Persekutuan.
2. There is no association between social support and perceived stress among pregnant women in health clinics in Wilayah Persekutuan.
3. There is no association between physical activity and perceived stress among pregnant women in health clinics in Wilayah Persekutuan.
4. There is no association between dietary intake and perceived stress among pregnant women in health clinics in Wilayah Persekutuan.

1.6 Conceptual Framework

Figure 1.1 shows the conceptual framework of the study. In this study, the dependent variable is perceived stress among pregnant women which is determined by using Perceived Stress Scale questionnaires (PSS-10 items). The independent variables are socio-demographic factors, social support, physical activity and dietary intake.

Independent Variable **Dependent Variable**

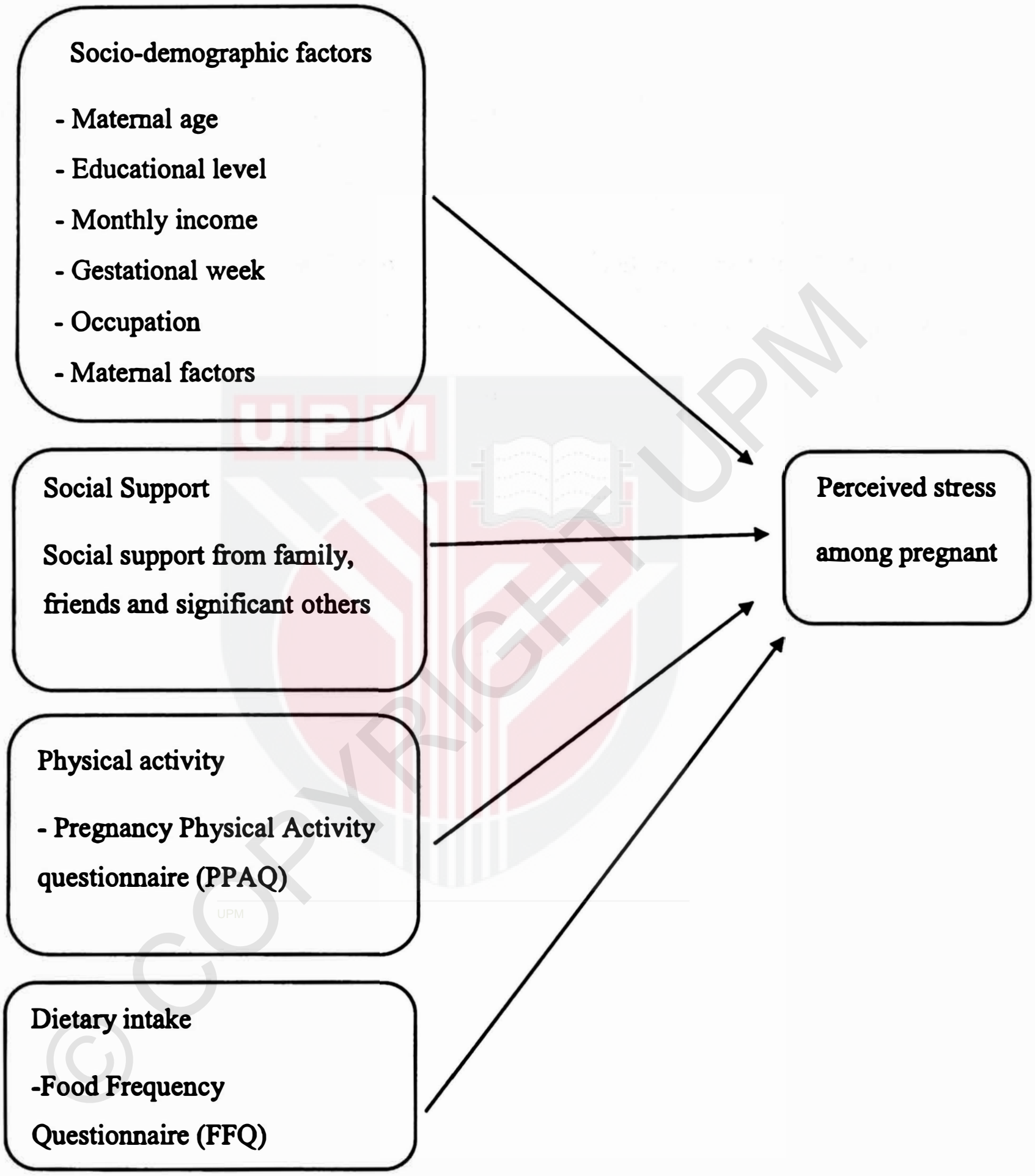

Figure 1.1. An Overview of Conceptual Framework of the study

CHAPTER TWO

LITERATURE RIVEW

2.1 Stress among pregnant women

The definition of stress is a condition or feeling, experienced when an individual perceives that demands exceed the personal and social assets the man or woman is capable to mobilize (Albalawi & Alsalamah, 2017). According to Ahsan et. al, (2009) this includes not only the situation whereby the pressure of works exceed the ability for a person to cope but where the person's knowledge and abilities were not sufficiently utilized which cause conflicts to them. Additionally, Woods et. al. (2010) reported that stress is very common in women during pregnancy and it can cause adverse birth outcomes such as low birth weight, smaller gestation for age, preterm birth and interfere mother-infant attachment (Ahsan et al., 2009; Dipietro, 2012; Kelly et al., 2009; Loomans et. al., 2013). Stress affects pregnant woman such as a woman's experience of pregnancy and childbirth, these conditions is most likely affecting her role as a mother. Any stress and emotional changes during pregnancy can have long-term adverse effect on their overall health and their child (Vamos et. al., 2015), and it may give impact to mother and child relationship and child development (Gondwe, White-traut, Brandon, Holditch-davis, & Carolina, 2017). Stress during pregnancy can influence the growth and development of the baby in the later stages of life (Kelly et al., 2009).

The prevalence of stress among pregnant women were alarming and it found to range from 10% and 15% in developed countries (Meijier et. al., 2014) while 6% to as high as 52.9% in developing countries (Shakiya, Situala, & Syanghwa, 2008). This research is supported by National Health Morbidity Survey 2015, whereas the prevalence of mental health problems among female adults increased from 10.7% in 1996 up to 29.2% in 2015 among Malaysian. Moreover, females were more prevalence to psychological distress compared to men (WHO, 2015).

2.2 Factors Contribute to Stress among Pregnant Women

Previous studies have shown various risk factors that could lead to stress which are gender, socioeconomic status which includes maternal age, education level, spouse occupation and household income (Lau & Yin, 2011; Da Costa et al., 2010; Shishehgar, Dolatian, Majd, & Bakhtiary, 2014). Besides, low income and low social support were associated with mental disorder (Lancaster et al., 2010). Shishehgar, Dolatian, Majd, and Bakhtiary (2014) reported that socioeconomic status was one of the crucial element that lead to stress during pregnancy.

2.2.1 Income and Educational Level

Pregnant women who has low income may associated with stress during pregnancy period. Shishehgar, Dolatian, Majd, and Bakhtiary (2014) reported about 61.6% of the pregnant women who having low class of husband occupation status were more prone to

have severe stress during pregnancy. Ryon and Gleason (2014) mentioned that facing daily struggles and problems where stresses were associated with low income had been negatively influence such control belief. Women who came from low income background which categorized as vulnerable group were more likely to face that daily struggles (Renzaho & Oldroyd, 2014). In addition, Kingston et al. (2012) reported that pregnant women who came from low income family were found to have higher stress level compared to higher income family. Moreover, previous study showed that low salary had become one of the major reason to the increase in stress among working women in banking sector in Bangladesh (Das, 2016). This study had been done among 60 working women in banking sector located in Dhaka City, Bangladesh where more than 43% working women aged 20-29 years having higher stress compared to other age group such as 30-39 years, 40-49 years and above 50 years. This is because they need to do account balancing that take much time after finishing working hour make them became more stress with low salary per month (Das, 2016) while study done by Issue and Devi (2016) stated that there is no significant association of stress level with family income or household income among non-working women but there is a significant association between stress level and family income in working women. This study showed 29.6% of non-working women having severe stress compared to working women only 8%. Hence, family income is not associated with stress level among non-working women.

In terms of education, there were several studies found a correlation between stress during pregnancy and pregnant women's educational level. A study done by Lau and Yin (2011) among 1151 women and half of them had attained tertiary education level. This study

reported that higher education level of pregnant women were able to manage their stress life events better. The multiple linear regression portrayed lower level of education (β=0.079) had significantly higher perceived stress score. This was also supported by Pantha et al. (2017) reported that 22% of the respondents faced stress and they were from primary educational level. The same study also showed the percentages of stress decreased until 6% as the educational level increased from primary educational level until graduate and above. Furthermore, a qualitative study from Australia mentioned that pregnant women who have higher level of education level tend to find effective ways to cope the stress, and also do some researches on the factors that would affect their pregnancy and emotions which subsequently can help to reduce the stress level (Carolan & Midwifery, 2013). However, other studies showed that pregnant women with higher educational level had higher stress level compared to low educational level ones (Gallo et al., 2012; Goyal et al., 2010; Kingston et al., 2012; & Woods et al., 2010).

2.2.2 Maternal Age

Study done by Lau and Yin who involves 1151 Macao pregnant women from second trimester of pregnancy showed that pregnant women who aged below than 25 years old tend to experience higher level of perceived stress which is same as previous study (Glazier et al., 2004). This happened due to younger pregnant women had to adjust their life to hold responsibilities as a mother role after delivery. Besides, it may be due to imbalance emotion and immaturity that they had to face at younger age as well as unstable economy to support their life and baby after giving birth (Kelly, 2006).

2.2.3 Husband Occupation

A study conducted among Iranian pregnant women by Shishehgar, Dolatian, Majd, & Bakhtiary (2014) examine the relationship between spouse occupation and stress rate. Surprisingly, low class job of spouse showed significantly correlated (r= -0.364) with severe perceived stress rate among pregnant women, 61.6% compared with high class job which is only 2.5% of them having severe stress rate. Besides, higher percentage of medium stress rate is portrayed among those spouses who works in medium class job (61.1%) as well as high class job (52.5%). It can be concluded that pregnant women who have spouse with low class job are also facing higher stress rate and it reduced with increasing the spouse job class. This study is supported by Farkas and Valdes (2010) which they mentioned that increase household size and number of people in a house is definitely increase the maternal stress that affect her role as mother to be. Furthermore, there is also a significant correlation (r= 0.807) between absence and partner occupation with stress among the mothers. This is due to poor economy and low class job between the partners that affect the psychological health of the mothers which subsequently give an impact on maternity stress level. The issue of husband employment status getting crucial as it contributes to stressful life event in pregnant women. Vijayaselvi et al., (2015) has reported that higher level of perceived stress in pregnant mother was significantly associated with imbalance employment status of the partner (p= 0.002) instead of the mothers occupation status.

2.2.4 Chronic Diseases during Pregnancy

According to International Diabetes Federation (IDF) (2015), gestational diabetes mellitus (GDM) is one of chronic diseases that increasing steadily in the world while hyperglycemia also is leading causes to pregnancy complication and mental health among 16.2% live birth during pregnancy in 2015. As reported by IDF, hyperglycemia was first diagnosed during pregnancy followed by diabetes mellitus and GDM. Besides, previous studies have shown the prevalence of GDM in Malaysia was ranging between 18.9% and 24.9% (Shamsudin et al., 2001). It has been recognized as a stress factor that can contributes to the seriousness of maternal and fetal health (Baz & Riveline, 2016; Carolan & Midwifery, 2013; Hayase, Shimada, & Seki, 2014). The cascade of GDM can develop other diseases too such as hypertension, preeclampsia, dyslipidemia and type 2 diabetes with increasing of maternal age (Sürücü, Besen, Duman, & Erbil, 2018). As reported by Lawson et al., (1994), GDM mothers more prone to develop and experiences stress compared to healthy mothers. This is supported by quantitative and qualitative studies which is it stated that GDM mothers who were encountered stress were likely to put themselves in bad health condition such as shock and fear (Kim, 2010; Morrison, Lowe, & Collins, 2014). Findings from mix studies of quantitative and qualitative also showed that GDM mothers facing high level of stress when they receive insulin treatment and also when they were worried for their inability to control GDM through diet, feared of facing complication during delivery (Harvey & Salamon, 2014).

2.2.5 Social Support

Social support is related with interpersonal communication of an individual which touch on emotional and material resources (Moak & Agrawal, 2010). It involves the process of exchanging resources with at least two individuals, perceived by the provider or recipients that promotes health of the recipient (Chen et al., 2007). Social support may have positives impact on health during stress period that improves coping ability (Iranzad, Bani, Hasanpour, & Mohammadalizadeh, 2014). Besides, Hughes (2002) mentioned that social support in cognitive aspect, may act as a buffer to attenuate psychological reaction to stress. Social support can be gained from spouse, reliable family members and probably friends before, during or after pregnancy. This is a program designed by Williamson and his colleagues to provide social network among pregnant women at pregnancy which may reduce the pregnancy stress (Williamson & LeFevre 1992; Lobel et al., 2000).

A study showed that having supportive supervisor, and have accessibility to free-time at work places were associated with reduced work-family conflicts (Muhammad, Zainab & Jalil, 2011). Kahn et al., (1964) has defined conflict as simultaneous occurrences of two or more sets of pressure or stress such that compliance with one would make more difficult compliance with the other. However, being married is found to reduce the stress level among the pregnant women as they get higher social support from their husbands regardless of working or not due to having good marital relationship between the husband and wife (Dapare & Abass, 2015). But, being married also can give an impact to rise the pregnancy stress level if they lack of social support from their partner, this is because supportiveness and quality of women relationship with her partner is important (Da Costa

et al., 1999). This is supported by Dapare and Abass (2015) where they reported that 40 out of 150 participants are significantly having stress disorders (p=0.0097) among married women. However, there were some studies that reported receiving greater social support from baby's father among unmarried pregnant women, had lower down the pregnancy stress level (Gurung et al., 2005; Saisto et al., 2001).

Previous study mentioned that white collar staff such as medical staff are confronted with many stressors at work, such as high levels of responsibility and everyday encounters with people's diseases, pain, and even death (Laranjeira, 2011). This can develop stress which may threat the physical and mental health, as well as marital relationships of medical staff as they do not gain enough social support from husbands, family members or friends (Wu, Li, Wang, Yang, & Qiu, 2011). This is due to stress in couples has a mutual influence, the stress of one partner can affect the other if he or she cannot cope adequately with it.

2.2.6 Physical Activity

Physical activity are believed to reduce stress among pregnant women. According to American College of Obstetricians and Gynecologists (ACOG) (2015), physical activity believes to help in maintaining healthy weight, improves cardiorespiratory fitness and even for psychologic well-being. Moreover, pregnancy period is the best time for behavior modification and for adopting a healthy lifestyle due to increase in motivation and access to medical supervision. Nawaz, Adams, and Katz (2000) stated that pregnant women were more likely to control weight, increase physical activity level and improve their dietary intake if the physician recommended to do so.

Previous study have shown a declining trend of actively participating in physical activity among pregnant women (Evenson and Wen ,2011). It is reported that among 359 of American pregnant women, majority of them spent their monitored time as sedentary behavior (57.1%) which indicates half of them as physically inactive. This study used accelerometer to determine the duration for physical activity and intensity. This study also showed the moderate-to-vigorous physical activity (MVPA) were higher in first ($p=0.02$) and second ($p<0.001$) trimesters compared to third trimester. However, study by Evenson & Wen (2011) do not show any correlation between physical activity and stress among pregnant women.

Another population study among 98 obese pregnant women with mean age 31.6 years old and at mean of 15.4 weeks of pregnant from European region found that, depressed obese pregnant women only spent about 13 min per day in MVPA ($p < 0.05$) compared to good well-being women who spent approximately 24 min per day in MVPA (Wit et al., 2015). A total of 27% of depressed obese pregnant women was significantly physically inactive compared to good well-being. This findings supported by previous study done by Claesson et al. (2014) that shows psychological depression mood is a wall to be active. This study have been done among obese pregnant women and divided into two group of physical active (PA) group and physical inactive (PIA) group. Both group have significant differences at gestational week 35. PA group reported high quality of mental health than PIA group. PIA group had more depression symptoms and lesser quality of life which EPDS score were higher in PIA group, 6.9% compared to PA group 4.6%.

2.2.7 Dietary Intake

Previous study have been done to observe the relationship between nutrition and stress during pregnancy whereas nutrition and stress have sense of bidirectional association which is scientifically proven (Janice, 2011). Variation of dietary intakes were reported to have significant association with mental health (fatigue, anxiety, stress) (Hurley et al., 2005). This study reported that pregnant women tend to consume more carbohydrates, fats, protein and zinc as well as having high energy intakes when they felt stress. Findings from Hurley et al (2005) also reported that the stressed pregnant women eat more bread ($r= 0.23$), sugary food and snacks ($r= 0.18$) which are caused by increase in stress hormone (cortisol) and progesterone that make them to elevate in appetite and eat those food groups.

Besides, a Brazilian study have reported that pregnant women who are encountered mental health disorder, they were likely eat more sugary food (Paskulin et al., 2017). Pregnant women with mental health disorders could experience extreme episodes of craving for sugary foods and food those were high in fats to achieve relief from unpleasant mood states (Yanovski, 2003).

2.3 Consequences of stress

Research have shown that women will be more vulnerable to emotional and psychological conditions such as stress during pregnancy which subsequently give impacts to the mother and also adverse perinatal outcomes (Carter & Kostaras, 2005). Previous studies suggest

that maternal prenatal stress such as stress, anxiety and depression might be strong predictors of child outcome such as cognitive development, anxiety and brain structure, in comparison with other prenatal psychiatric symptoms (Buss, Poggi, Muftuler, Head, & Sandman, 2010; Davis & Sandman, 2010; Huizink, Medina, Mulder, Visser, & Buitelaar, 2003). Many studies have been done to investigate the relationship between prenatal stress with premature birth and low birth weight (Graignic-philippe, Dayan, Chokron, Jacquet, & Tordjman, 2014; Roy-matton, Moutquin, Brown, Carrier, & Bell, 2011). Additionally, based on animal study (rats, monkey, sheep), prenatal stress showed to have effect not only with perinatal complications but also premature birth, low birth weight and long term neurodevelopment (Weinstock, 2008).

A prospective cohort study by Roy-matton et al., (2011) among Canadian 303 pregnant women who participated to determine perceived maternal stress and other psychosocial profile related to neonatal outcomes. This study has proved that at least 81 pregnant women had one complication and lower gestational age is one of the factor that contribute to pregnancy complications such as preeclampsia (37%) and low birth weight (35.8%). Pregnant women with 25 to 30 weeks of gestation had moderate perceived stress level which also facing preterm birth. It can be conclude that encounter prenatal perceived stress before 20 weeks of pregnancy is associated with obstetrics complications such as pre-term birth.

Moreover, preterm birth was the outcome that accounting almost 25% of pregnancy complications as the pregnant women had higher level of perceived stress (Roy-matton et al., 2011). In addition, Rondo et al. (2003) mentioned that maternal stress also associated with increased in intrauterine growth restriction (IUGR) and preterm birth. Thus, it gives impact to emotional and cognitive deficits in early life (Talge et al, 2007).

CHAPTER THREE

METHODOLOGY

3.1 Study Design

A cross-sectional study was conducted aimed to describe the association between socio-demographic factors, social support, physical activity and dietary intake with perceived stress among pregnant women in health clinics in Wilayah Persekutuan (WP).

3.2 Study Location

The study was conducted in W.P Putrajaya and W.P Kuala Lumpur. In 2016, the highest crude birth rate was recorded in W.P Putrajaya in 2016 while 13.8% recorded in W.P Kuala Lumpur (Department of Statistics Malaysia, 2018) which may contributes to increase number of pregnant women in region. The distance between W.P Putrajaya with Universiti Putra Malaysia was less than 10.0 km and about 25km from south of Kuala Lumpur (capital of Malaysia).

3.3 Sample size Calculation

The sample size of the participants was calculated based on formula to determine the correlation between main variables. Thus, specific formula below was used to estimate the number of participants for this study (Hulley, Cummings, Browner, Grady & Newman, 2013)

$$n = \left[\left(\frac{Z_\alpha + Z_\beta}{0.5\ (ln[(1+r)/(1-r)]} \right]^2 + 3 \right.$$

Where

n= calculated sample size

Z_α= 1.96

Z_β= 0.84

r = the expected correlation coefficient

Table 3.1 showed the sample calculation based on the factors that correlated with stress among pregnant women in which the correlation coefficients were obtained from previous studies. Based on table 3.1 the total sample size of the study was 150 participants. However, after consideration of response rate, and proportion of eligibility which is 20% from total respondents, the final sample size required for this study was **180** respondents.

Table 3.1 shows the total sample size of the study

Correlation studies	Correlation, r*	Sample size, N
Social support and perceived stress (Iranzad et al., 2014)	-0.5	$N = \left[\left(\frac{1.96+0.84}{0.5\ (ln[(1-0.5)/(1+0.5)]}\right]^2 + 3$ **= 150**

3.4 Sampling design

Figure 3.1 showed the non-probability sampling applied in this study. There were 4 governmental health clinics in Putrajaya. However, only 2 maternal and child health clinics were purposively selected for the data collection. Besides, there were 17 maternal and child health clinics under Health Department of W.P Kuala Lumpur and Putrajaya. However, 5 were chosen named Klinik Kesihatan Ibu dan Anak Jalan Bangsar, Klinik Kesihatan Ibu dan Anak Pantai Indah, Klinik Kesihatan Ibu dan Anak Cheras Makmur, Klinik Kesihatan Ibu dan Anak Sungai Besi, Klinik Kesihatan Ibu dan Anak Setapak (Official Portal Department of Federal Territory Kuala Lumpur and Putrajaya). All pregnant women were included and invited in this study. The response rate in this study was 100%.

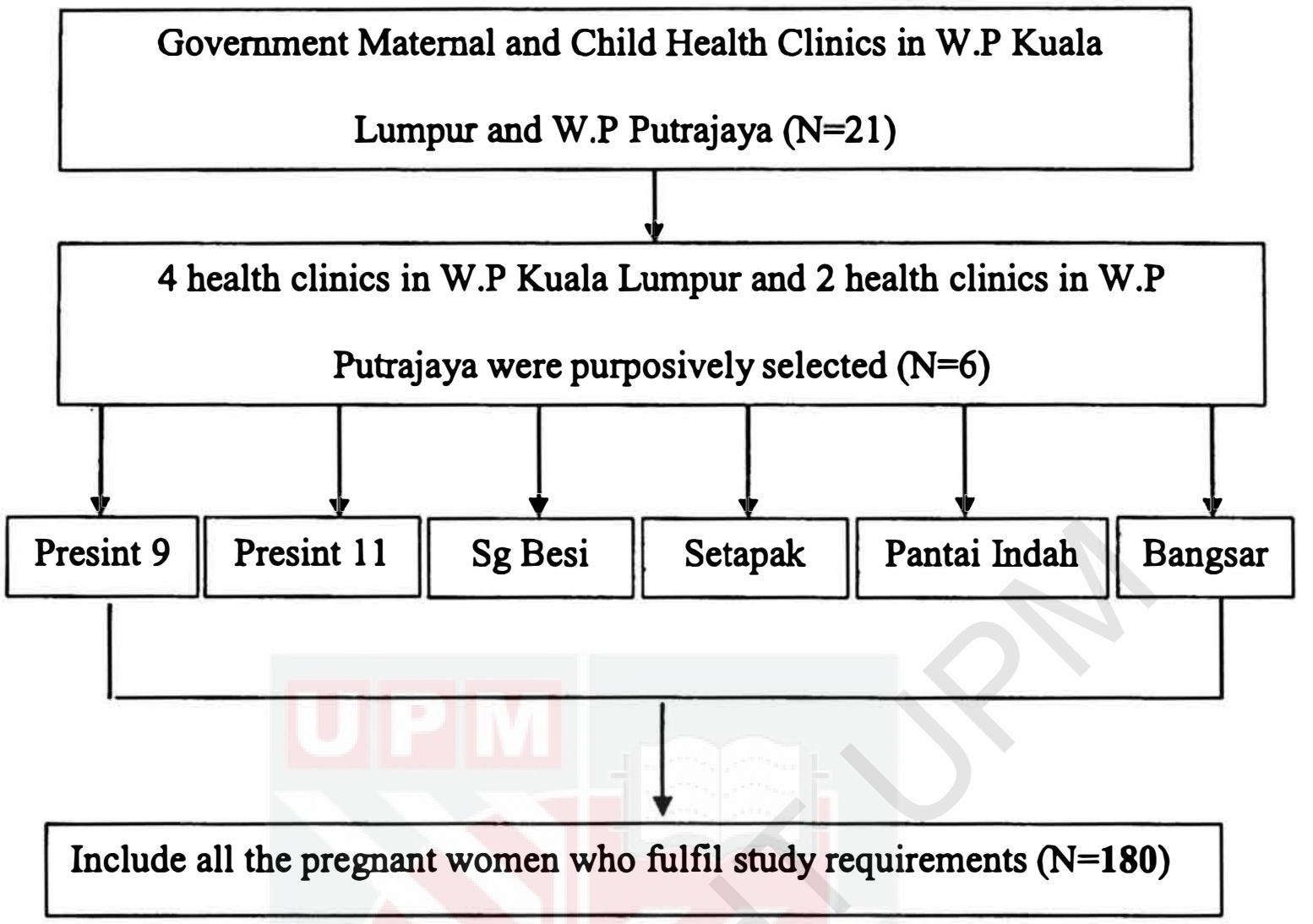

Figure 3.1: Sampling procedure for the selection of respondents

Table 3.2 shows the inclusion and exclusion criteria for subject selection. This study include all pregnant women aged from 19 to 49 years old, Malaysian and singleton pregnancy. Meanwhile, handicapped or physical inability and multiple pregnancy were excluded.

Table 3.2 Inclusion and exclusion criteria for subject selection

Inclusion criteria	Exclusion criteria
19 to 49 years old	Handicapped or with physical inability
Malaysian pregnant women	
Singleton pregnancy	Multiple pregnancy
Comorbidities such as gestational diabetes, hypertension, anaemia	

3.5 Ethical Approval

Approval for the study was obtained from Medical Research and Ethics Committee, Malaysia (MREC). In advance of data collection, permission from the Director of Health Department of Federal Territory Kuala Lumpur and Putrajaya as well as Head of each health clinics were obtained. All the documents were included in Appendix II.

3.6 Study instruments

Socio-demographic factors

All the participants were given a self-administered questionnaire which includes information such as name, age, date of birth, mobile number, ethnicity, marital status, educational level, job status, monthly income, gestational week, and maternal health status.

Physical activity

Pregnancy Physical Activity Questionnaires (PPAQ) was used to determine physical activity in pregnant women (Chasan-Taber et al., 2004). This questionnaires was semi-quantitative which the participants required to report their time spent in participating in 32 different activities such as household chores and care giving (13 activities), occupational (5 activities), sports or exercises (8 activities), transportation (3 activities) and inactivity (3 activities) as well as intensity level. For sedentary intensity, question numbers 11, 12, 13, 22 and 32, while for light intensity questions numbers 4, 5, 7, 15, 16, 17, 18, 20, and 34 as well as for open ended questions, 30 and 31 if the activities are ≤ 2.9 Metabolic Equivalent (MET). Besides, questions number 6, 8, 9, 10, 14, 19, 21, 23, 24, 27, 28, 29, 33, 35 and 36 are categorized under moderate-intensity while questions number 25 and 26 are for vigorous intensity. Furthermore, for household activity it involves question numbers 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18 and 19. Occupational activity includes question numbers 32, 33, 34, 35 and 36 while 23, 24, 25, 26, 27, 28, 29, 30 and 31 for sports and exercise. Participants had to select options for the best approximates amount of time spent for current trimester. Each question had 6 options and possible time durations range from 0 to 6 or more hours per day and 0 to 3 or more hours per weeks. The participants were allowed to add up their activities in final section of the questionnaires because it was open-ended. There were specific MET value which was 1 MET value = 1kcal/kg x hour. These MET value were used to classify activities into different intensity such as sedentary (<1.5 METs), light (1.5 ≤ 3.0 METs), moderate (3.0–6.0 METs) and vigorous (>6.0 METs). Filed based measurement was used to represent activity intensity for walking and light-to-moderate-intensity household tasks. The

amount of time spent at each activity for a given intensity level was total up to determine the duration of time spent per week at each relative intensity of PA. This questionnaire had a good internal class consistency with a Cronbach's alpa 0.78 (Chasan-Taber et al., 2004).

3.6.3 Social Support

Validated Malay version of Multidimensional Scale of Perceived Social Support had 12 items which was used to determine three subscales of social support such as friends, family and significant others (Ng et al., 2010). Questions under subscales friends were numbers 6, 7, 9 and 12 while questions under subscales family were 3, 4, 8 and 11. Meanwhile, subscales of significant others questions consists of numbers 1, 2, 5 and 10. This questionnaire consisted of 7 point-Likert scale (from 1= strongly disagree to 7= strongly agree) and the score for each subscales ranged from 4 to 28 while the possible total score ranged from 12 to 84. Higher social support was indicated by higher total score. This scale has good internal consistency (Cronbach's alpha) of social support from family, friends and significant others such as 0.89, 0.91 and 0.90 respectively.

3.6.4 Dietary Intake

Food Frequency Questionnaire (FFQ) was used in this study to examine food consumption pattern for pregnant women. It consisted of 126 items which were listed into 15 food groups. It is self-administered questionnaire where it was conducted by interviewing and face-to-face session. The respondents were asked on the frequency of food intake either per day, per week, per month, per year or never on each listed items. Besides, the respondents were also needed to report the amount of serving for every time they eat. The frequency of food intake were based on habitual intake for the past year. They had to choose only one options out of five which these options reflected the frequency of food intake as number of times per week, number of times per month, number of times per year and never. However, for seasonal food basis such as durian, the respondents were required to report the duration of intake instead of frequency. *Album Saiz Sajian Makanan Malaysia* were used as a standard for each serving size as well as list of food items weight in household measures (Food Portion Size of Malaysian Foods Album, 2002/2003). The serving size was used based on medium size that includes piece, one whole fruits, match box size, cup, spoons and others. Other than that, energy intake (kCal) of macronutrient and fiber was calculated by using Nutritionist Pro software while food frequency was then converted into amount of food intake by using formula:

Amount of food (g) per day = frequency of intake (conversion factor) X serving size X total number of servings X weight of food in one serving

Figure 3.2 Formula to calculate amount of food (g) per day

3.6.5 Stress

Validated Malay version of Perceived stress scale (PSS) questionnaires of 10 items was used in this study (Al-Dubai, Alshagga, Rampal, & Sulaiman, 2012). Thought and feelings of stressful events, tackling, handling and coping with the experiences of general perceived stress for last month were evaluated. Besides, this scale were also determined the risk factors of behavioral disorders and showed the relations of stress. There were 5 point of Likert answer scales was used in this questionnaires as "never, almost never, sometimes, fairly often and very often". There were 4 positives questions and 6 negative questions. 4 was the minimum score and 0 was the maximum score for positives questions while for 0 was the minimum score and 4 was the maximum score for negatives questions were given for "never" and "very often" respectively. The score ranges 0-40, higher scores were indicated higher stress level. This scale presented a good internal consistency with a Cronbach's alpha 0.86 (Iranzad et al., 2014).

3.7 Pre-test

Prior to the study, the questionnaire were pre-tested on 10 pregnant women from any of health clinics listed above who met the requirement of study criteria. Pre-tested were conducted in December 2018. The participants had similar characteristics such as aged from 19 to 49 years old, Malaysian pregnant women and singleton pregnancy as required in study sample for pre-tested. Time taken to complete the questionnaire was determined. The clarity of the questions, instructions and also understanding of questionnaire were

examined. Any difficulties faced by participants of pre-tested in answering the questionnaire were identified and improved based on their feedback. The feasibility of questionnaire was re-assessed after pre-tested. The pre-tested participants were excluded during data collection of this study.

3.8 Study protocol

Figure 3.3 shows the data collection was carried out from January 2019 to March 2019. Approval for the study protocol was obtained from Medical Research and Ethics Committee, Malaysia (MREC) and other relevant approvals prior to the start of any study related activities. In advance of data collection, short meeting was conducted between the researchers with authorized officers to explain the purpose of the study in order to get permission from those health clinics. The respondents were informed on the purpose of the study by distributing respondent information sheet. Once the administration of questionnaires were approved, the respondents received the informed consent form. After they agreed to participate in this study, the respondents were assessed by filling up self-administered questionnaires that comprised of four sections which were their socio-demographic background, social support, physical activity level, dietary intake and stress. Total estimation for the respondents to complete all the questionnaire was 20 minutes. Perceived social support of respondents was measured by using self-administered questionnaire, Multidimensional Scale of Perceived Social Support (MSPSS-12 items) while Pregnancy Physical Activity Questionnaire (PPAQ) was used to measure respondent's physical activity level. Perceived stress level were evaluated by using

Perceived Stress Scale (PSS-10 items) questionnaire and Food Frequency questionnaires (FFQ) was used to examined the pattern of food consumption among the respondents.

All collected data regarding the information of respondents were kept confidentially and anonymous. Plus, only the researcher who carrying out the investigation had access to that particular data. The references number in the questionnaires were used as subject data sheets instead of respondents' name. Besides, the data stored in the computer privately and safely that equipped with password to protect and maintain for a minimum 5 years after the completion of the study until destroyed. The respondents received email of a brief sheet for the findings after completion of the study, if required. Data from the study documented for a Final Year Project thesis and potential publications. No personal information of respondents exposed in the thesis or paper during the publication to ensure their privacy were protected.

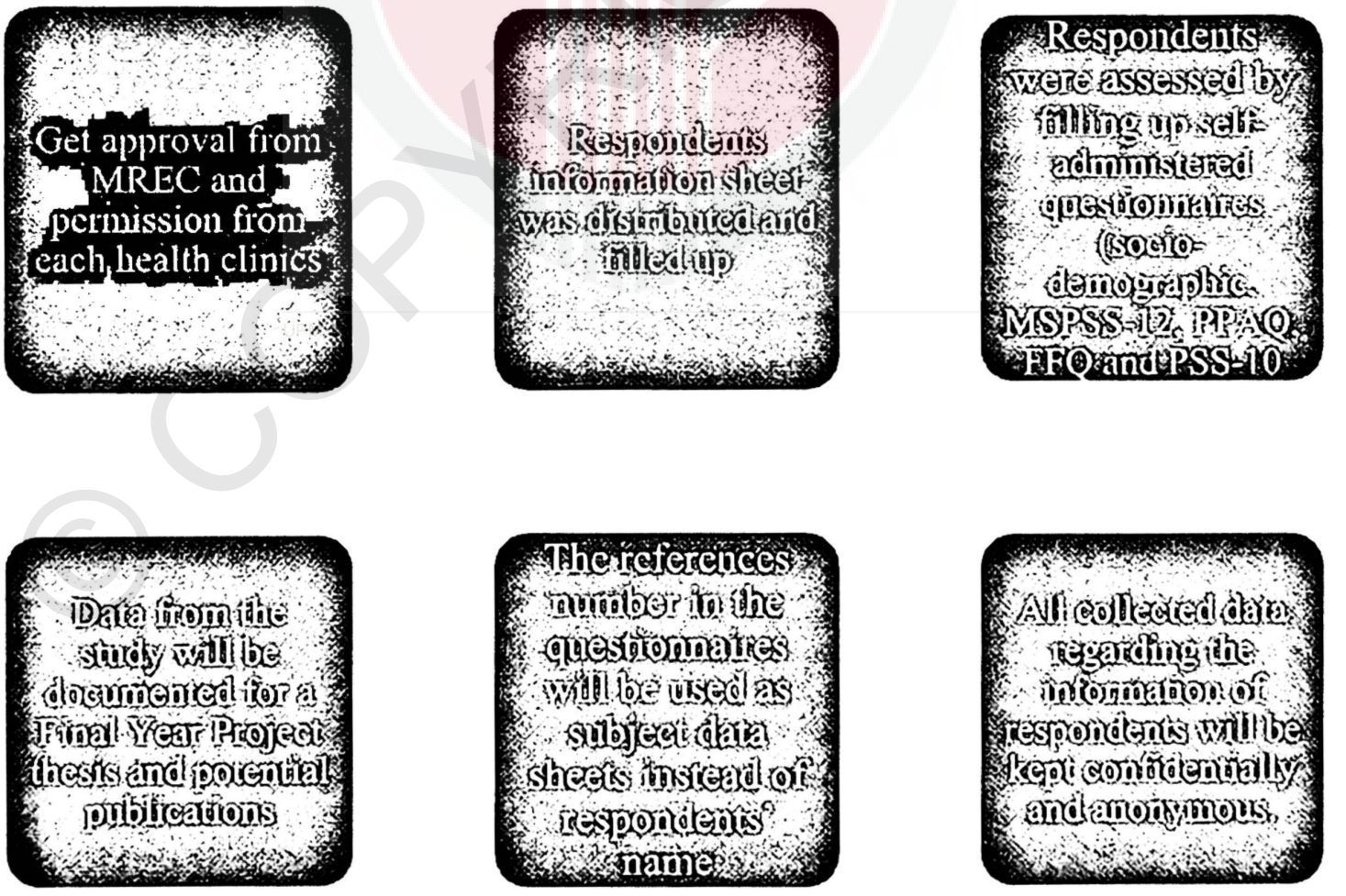

Figure 3.3 Flow chart of study protocol

3.9 Data Analyses

All the statistical analysis was performed by using IBM SPSS Statistics 23 (IBM Corp., Armonk, New York, USA). Univariate analysis was used to analyze descriptive data and the results were presented as frequencies and percentages for categorical variables and as means and standard deviations for continuous variables. Pearson's product moment correlation was used to determine the correlation between socio-demographic factors (monthly income, maternal age), social support, physical activity and dietary intake with stress scores. Chi-square was conducted to determine the percentage of socio-demographic factors (educational level, ethnicity) with stress level. The acceptable level of statistical significance for all tests was set at $p<0.05$.

CHAPTER FOUR

4.1 RESULTS AND DISCUSSION

Information on descriptive results and hypotheses testing will be discussed in this chapter. Mean and distribution of socio-demographic factors, social support, physical activity, dietary intake and perceived stress were discussed in those following table such as table 4.1, table 4.2 and table 4.3 results while table 4.4, table 4.5, table 4.6, table 4.7 and table 4.8 will discussed on hypotheses testing results.

The total number of respondents was 189 and the age ranged from 19 to 49 years old (M= 29.95, SD= 4.81) (Table 4.1). Most of the respondents were Malays (91.5%) and married (98.4%). More than half of respondents were having tertiary educational level (62.4%) and served highest in private sector (37.0%). Near half of them were earned more than RM 4000 (48.7%) and do not have any children yet (42.3%). Besides, majority of the pregnant mothers were at second trimester (44.4%) with the average 25.46 weeks, (SD= 9.35). Only quarter of them were suffered from comorbidities such as gestational diabetes, hypertension, and anemia during pregnancy (27.5%).

Table 4.1 Socio-demographic backgrounds of the pregnant women (N=189)

Characteristics	Mean ± SD	n (%)
Age (years)	29.95 ± 4.81	
19-29 year		93 (49.2)
30-39 years		89 (47.1)
40-49 years		7 (3.7)
Ethnicity		
Malay		173 (91.5)
Chinese		7 (3.7)
Indian		5 (2.6)
Others		4 (2.1)
Marital status		
Married		186 (98.4)
Widow/single/divorce		3 (1.6)
Education level		
Primary		3 (1.6)
Secondary		68 (36.0)
Tertiary		118 (62.4)
Working status		
Government		49 (25.9)
Private		70 (37.0)
Own business		11 (5.8)
Housewife		59 (31.2)
Partner working status		
Yes		187 (98.9)
No		2 (1.1)

Table 4.1 Socio-demographic backgrounds of the pregnant women (Continued)

Characteristics	Mean ± SD	n (%)
Maternal Income (RM)		
No income		60 (31.7)
500 – 1000		2 (1.1)
1001 – 2000		29 (15.3)
2001 – 3000		48 (25.4)
3001 – 4000		23 (12.2)
> 4000		27 (14.3)
Total household income (RM)		
< 500		1 (0.5)
500 – 1000		3 (1.6)
1001 – 2000		27 (14.3)
2001 – 3000		32 (16.9)
3001 – 4000		34 (18.0)
> 4000		92 (48.7)
Number of children		
0		80 (42.3)
1		35 (18.5)
>1		74 (39.2)
Trimester of pregnancy (weeks)	25.46 ± 9.35	
1st trimester (1-12 weeks)		26 (13.8)
2nd trimester (13-28 weeks)		84 (44.4)
3rd trimester (29-40 weeks)		79 (41.8)
Pregnancy morbidities		
No		137 (72.5)
Yes		52 (27.5)

Information about distribution and mean perceived social support of respondents by trimesters are shown in Table 4.2. The average of perceived social support of the respondents in this study was 5.71 (SD= 0.85). Thus, 75.1 % of them were having high perceived social support and only 24.9 % were moderate perceived social support. However, pregnant mothers in first trimester were receiving high perceived social support (80.8%) followed by third trimester (75.1%) and second trimester (72.6%).

Table 4.2 Mean and distribution multidimensional scale of perceived social support by trimesters of pregnancy

Variables	Mean ± SD / n (%)			
	1st trimester (n= 26)	2nd trimester (n=84)	3rd trimester (n=79)	Total (n=189)
Perceived social support	5.80 ± 0.82	5.64 ± 0.86	5.76 ± 0.85	5.71 ± 0.85
Low	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate	5 (19.2)	23 (27.4)	19 (24.1)	47 (24.9)
High	21 (80.8)	61 (72.6)	60 (75.9)	142 (75.1)

Information on multidimensional scale of perceived social support items were described in the Table 4.3. About 42.9% of the respondents were very strongly agree that they have

Majority of them answered as very strongly agree that they received social support from their family (41.8%, 41.8%, 31.2% and 34.4%). Meanwhile, most of them were mildly agree for perceived social support from their friends (40.7%, 39.7%, 36.0% and 36.5%).

Table 4.3 Multidimensional scale of perceived social support items (n=189)

		Multidimensional scale of perceived social support	Mean ± SD	n (%)						
				Very strongly disagree	Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree	Very strongly agree
Significant others support	Q1	There is a special person who is around when I am in need.	5.97 ± 1.04	0 (0.0)	1 (0.5)	3 (1.6)	3 (1.6)	68 (36.0)	33 (17.5)	81 (42.9)
	Q2	There is a special person with whom I can share my joys and sorrows.	6.01 ± 1.04	0 (0.0)	1 (0.5)	3 (1.6)	7 (3.7)	53 (28.0)	44 (23.3)	81 (42.9)
	Q5	I have a special person who is a real source of comfort to me	6.14 ± 1.00	0 (0.0)	0 (0.0)	2 (1.1.)	9 (4.8)	43 (22.8)	42 (22.2)	93 (49.2)
	Q10	There is a special person in my life who cares about my feelings.	6.07 ± 1.03	0 (0.0)	1 (0.5)	3 (1.6)	6 (3.2)	48 (25.4)	44 (23.3)	87 (26.0)

Table 4.3 Multidimensional scale of perceived social support items (Continued)

Multidimensional scale of perceived social support			Mean ± SD	n (%)						
				Very strongly disagree	Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree	Very strongly agree
Family support	Q3	My family really tries to help me.	5.94 ± 1.11	1 (0.5)	1 (0.5)	2 (1.1.)	10 (5.3)	55 (29.1)	41 (21.7)	79 (41.8)
	Q4	I get the emotional help and support I need from my family.	5.97 ± 1.11	1 (0.5)	1 (0.5)	1 (0.5)	8 (4.2)	53 (28.0)	45 (23.8)	79 (41.8)
	Q8	I can talk about my problems with my family.	5.71 ± 1.15	0 (0.0)	1 (0.5)	8 (4.2)	15 (7.9)	56 (29.6)	50 (26.5)	59 (31.2)
	Q11	My family is willing to help me make decisions	5.85 ± 1.03	0 (0.0)	0 (0.0)	4 (2.1)	10 (5.3)	62 (32.8)	48 (25.4)	65 (34.4)
Friends support	Q6	My friends really try to help me.	5.39 ± 1.26	2 (1.1.)	4 (2.1)	8 (4.2)	16 (8.5)	77 (40.7)	39 (20.6)	43 (22.8)
	Q7	I can count on my friends when things go wrong.	5.14 ± 1.29	3 (1.6)	6 (3.2)	9 (4.8)	25 (13.2)	75 (39.7)	43 (22.8)	28 (14.8)
	Q9	I have friends with whom I can share my joys and sorrows.	5.28 ± 1.28	2 (1.1)	6 (3.2)	8 (4.2)	22 (11.6)	68 (36.0)	49 (25.9)	34 (18.0)
	Q12	I can talk about my problems with my friends.	5.08 ± 1.38	3 (1.6)	8 (4.2)	12 (6.3)	26 (13.8)	69 (36.5)	40 (21.2)	31 (16.4)

Table 4.4 showed information regarding the mean and distribution of physical activity ($MET - hweek^{-1}$) during pregnancy of respondents. This findings showed that the mean for total activity among pregnant women was higher (249.39 ± 146.58) ($MET - hweek^{-1}$) compared to study reported by Chai, Gan, Chin, Ching, & Appukutty, (2019), 195.9 ± 94.2 ($MET - hweek^{-1}$). Most of the respondents were likely to participate in household activities such as mopping, washing and laundry. These household activities were at < 2.9 MET and the average was 110.78 ± 78.45 ($MET - hweek^{-1}$)

Table 4.4 The mean and distribution of physical activity ($MET - hweek^{-1}$) during pregnancy

Variables	n (%)	Mean ± SD
Total activity	189 (100.0)	249.39 ± 146.58
By intensity		
Sedentary		81.71 ± 62.78
Light		102.97 ± 56.52
Moderate		64.38 ± 83.37
Vigorous		0.45 ± 1.75
By type of activity		
Household/caregiving	187 (98.9)	110.78 ± 78.45
Occupational	132 (69.8)	77.24 ± 99.31
Sports/exercise	99 (52.4)	3.64 ± 11.14

Information about physical activity items during pregnancy were shown in Table 4.5. The items were further divided into 6 categories that consists of sedentary, light, moderate, vigorous, household activity, occupational activity and sports or exercise. For items under sedentary intensity, the pregnant women spent more time on watching television for almost 1 to 2 hours per day (29.1%) and more than 3 hours per day (53.8%) sitting at workplace. Meanwhile, the pregnant women did light intensity especially in preparing meals whereas they spent about ½ hour to 1 hour (35.4%) and near half of them spent less than ½ an hour for light cleaning (46.0%). Other than that, for moderate intensity, the pregnant women mostly standing or walking slowly at work (41.5%) for less than ½ an hour per day while for vigorous intensity, only 0.5% of them walking up hills for 2 to 3 hours per day. Almost all pregnant women were involved in household activity such as preparing dishes, shopping and light cleaning. 69.8% of them participated in occupational activities such as walking or carrying things at workplace. Other than that, half of the pregnant women not actively participated in sports (52.4%). For instances, they were walking both for slowly and quickly for fun or exercise and walking up hills.

Table 4.5 Physical activity items during pregnancy (n=189)

Physical activity items during pregnancy			n (%)					
			None	Less than ½ hour per day	½ to almost 1 hour per day	1 to almost 2 hours per day	2 to almost 3 hours per day	3 or more hours per day
Light intensity	4	Preparing meals (cook, set table wash dishes)	32 (16.9)	26 (13.8)	67 (35.4)	43 (23.8)	12 (6.3)	9 (4.8)
	5	Dressing, bathing, feeding children while you are sitting	116 (61.4)	41 (21.7)	15 (7.9)	9 (4.8)	4 (2.1)	4 (2.1)
	7	Playing with children while you are sitting or standing	87 (46.0)	18 (9.5)	19 (10.1)	16 (8.5)	15 (7.9)	34 (18.0)
	15	Light cleaning, (make beds, laundry, iron, put things away)	8 (4.2)	87 (46.0)	43 (22.8)	31 (16.4)	17 (9.0)	3 (1.6)
	16	Shopping (for foods, clothes and other items)	28 (14.8)	14 (7.4)	26 (13.8)	52 (27.5)	43 (22.8)	26 (13.8)
	17	Heavier cleaning (vacuum, mop, sweep, wash, windows)	46 (24.3)	77 (40.7)	45 (23.8)	17 (9.0)	3 (1.6)	1 (0.5)
	18	Mowing lawn while on a riding mower	187 (98.9)	2 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Table 4.5 Physical activity items during pregnancy (n=189) (Continued)

Physical activity items during pregnancy			n (%)					
			None	Less than ½ hour per day	½ to almost 1 hour per day	1 to almost 2 hours per day	2 to almost 3 hours per day	3 or more hours per day
Sedentary intensity	11	Sitting and using a computer or writing, while not at work	108 (57.1)	28 (14.8)	20 (10.6)	13 (6.9)	13 (6.9)	7 (3.7)
	12	Watching television or a video	18 (9.5)	26 (13.8)	23 (12.2)	55 (29.1)	34 (18.0)	33 (17.5)
	13	Sitting and reading, talking or on the phone, while not at work	52 (27.5)	32 (16.9)	49 (25.9)	35 (18.5)	9 (4.8)	12 (6.3)
	22	Driving or riding a car	103 (54.5)	37 (19.6)	19 (10.1)	18 (9.5)	8 (4.2)	4 (2.1)
	32	Sitting at working or in class	6 (4.6)	14 (10.8)	10 (7.7)	15 (11.5)	15 (11.5)	70 (53.8)
Vigorous intensity	25	Walking quickly up hills for fun or exercise	171 (90.5)	13 (6.9)	4 (2.1)	0 (0.0)	1 (0.5)	0 (0.0)
	26	Jogging	179 (94.7)	7 (3.7)	3 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)

Table 4.5 Physical activity items during pregnancy (n=189) (Continued)

Physical activity items during pregnancy			n (%)					
			None	Less than ½ hour per day	½ to almost 1 hour per day	1 to almost 2 hours per day	2 to almost 3 hours per day	3 or more hours per day
Moderate intensity	20	Walking slowly to go places (such as to the bus, work, visiting) Not for fun or exercise	88 (46.6)	54 (28.6)	21 (11.1)	12 (6.3)	8 (4.2)	6 (3.2)
	34	Standing or slowly walking at work not carrying anything	11 (8.5)	54 (41.5)	27 (20.8)	15 (11.5)	6 (4.6)	17 (13.1)
	6	Dressing, bathing, feeding children while you are standing	116 (61.4)	53 (28.0)	11 (5.8)	5 (2.6)	2 (1.1)	2 (1.1)
	8	Playing with children while you are walking or running	136 (72.0)	14 (7.4)	9 (4.8)	13 (6.9)	6 (3.2)	11 (5.8)
	9	Carrying children	124 (65.6)	33 (17.5)	7 (3.7)	10 (5.3)	7 (3.7)	8 (4.2)
	10	Taking care of older adult	138 (73.0)	14 (7.4)	15 (7.5)	7 (3.7)	6 (3.2)	9 (4.8)
	14	Playing with pets	168 (88.9)	8 (4.2)	8 (4.2)	2 (1.1)	2 (1.1)	1 (0.5)

Table 4.5 Physical activity items during pregnancy (n=189) (Continued)

Physical activity items during pregnancy			n (%)					
			None	Less than ½ hour per day	½ to almost 1 hour per day	1 to almost 2 hours per day	2 to almost 3 hours per day	3 or more hours per day
Moderate intensity	19	Mowing lawn using a walking mower, raking, gardening	184 (97.4)	4 (2.1)	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)
	21	Walking quickly to go places (such as to the bus, work, or school) Not for fun or exercise	161 (85.2)	16 (8.5)	10 (5.3)	2 (1.1)	0 (0.0)	0 (0.0)
	23	Walking slowly for fun or exercise	97 (51.3)	36 (19.0)	32 (16.9)	17 (9.0)	2 (1.1)	5 (2.6)
	24	Walking more quickly for fun or exercise	169 (89.4)	12 (6.3)	6 (3.2)	2 (1.1)	0 (0.0)	0 (0.0)
	27	Prenatal exercise class	184 (97.4)	2 (1.1)	2 (1.1)	1 (0.5)	0 (0.0)	0 (0.0)
	28	Swimming	189 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Table 4.5 Physical activity items during pregnancy (n=189) (Continued)

Physical activity items during pregnancy			n (%)					
			None	Less than ½ hour per day	½ to almost 1 hour per day	1 to almost 2 hours per day	2 to almost 3 hours per day	3 or more hours per day
Moderate intensity	29	Dancing	189 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	33	Standing or slowly walking at work while carrying things (heavier than a 1 gallon milk jug)	63 (48.5)	36 (27.7)	13 (10.0)	9 (6.9)	3 (2.3)	6 (4.6)
	35	Walking quickly at work while carrying things (heavier than a 1 gallon milk jug)	107 (82.3)	11 (8.5)	9 (6.9)	0 (0.0)	0 (0.0)	3 (2.3)
	36	Walking quickly at work not carrying anything	102 (77.9)	12 (9.2)	9 (6.9)	0 (0.0)	2 (1.5)	6 (4.6)

Information regarding maternal energy and food intake during pregnancy are described in Table 4.6. The result showed that the average energy intake (kCal) of pregnant women were 2283.77 kCal, (SD= 979.48) which were lower compared to study done by Woon, Yu & Chin (2019), M= 2365, (SD= 709). Current study showed majority of the third trimester pregnant mothers do not meet energy (kCal) and protein intake according to Recommended Nutrient Intake (RNI), (61.1%) and (50.0%) for aged ranged from 19 to 29 years old. Besides, the same study reported that more than half of pregnant women which in second trimester (59.5%) and third trimester (55.8%) also do not meet the RNI for energy intake (kCal) for aged between 30 to 59 years old. Previous study by Chai et al., (2019) showed that three in five of the pregnant mothers, which is 61.0% of them exceeded the RNI for fat compared to 31.0% in this current study. As reported by Chai et al., (2019), the mean for fat intake (87.0 ± 36.3) (kCal) and carbohydrates (305.9 ± 95.1) (kCal) were higher compared to current findings, fat intake (64.27 ± 36.83) (kCal) and carbohydrate (296.73 ± 155.31) (kCal). Therefore, they consumed high fat diet during pregnancy. Based on figure 4.1, all of the pregnant mothers consume cereal and cereal products (100.0%) while only 21.2% of them were eating nuts and nuts products. High percentages were shown for fruits and vegetables, (97.35%) and (94.18%) out of 189 pregnant mothers.

Table 4.6 Maternal energy and food intakes during pregnancy (n=189)

		n (%)						Mean ± SD
		19 – 29 years old			30 – 59 years old			
		1st trimester	2nd trimester	3rd trimester	1st trimester	2nd trimester	3rd trimester	
Energy intake (kCal)	< RNI	8 (53.3)	21 (50.0)	22 (61.1)	2 (18.2)	25 (59.5)	24 (55.8)	2283.77 ± 979.48
	≥ RNI	7 (46.7)	21 (50.0)	14 (38.9)	9 (81.8)	17 (40.5)	19 (44.2)	
Carbohydrates (g/day)								296.73 ± 155.31
Protein (g/day)	< RNI	3 (20.0)	12 (28.6)	18 (50.0)	2 (18.2)	15 (35.7)	17 (39.5)	108.68 ± 187.45
	≥ RNI	12 (80.0)	30 (71.4)	18 (50.0)	9 (81.8)	27 (64.3)	26 (60.5)	
		19 – 59 years old						
Fat (g/day)		1st trimester		2nd trimester		3rd trimester		
	< RNI	11 (42.3)		51 (60.7)		48 (60.8)		64.27 ± 36.83
	≥ RNI	15 (57.7)		33 (39.3)		31 (39.3)		

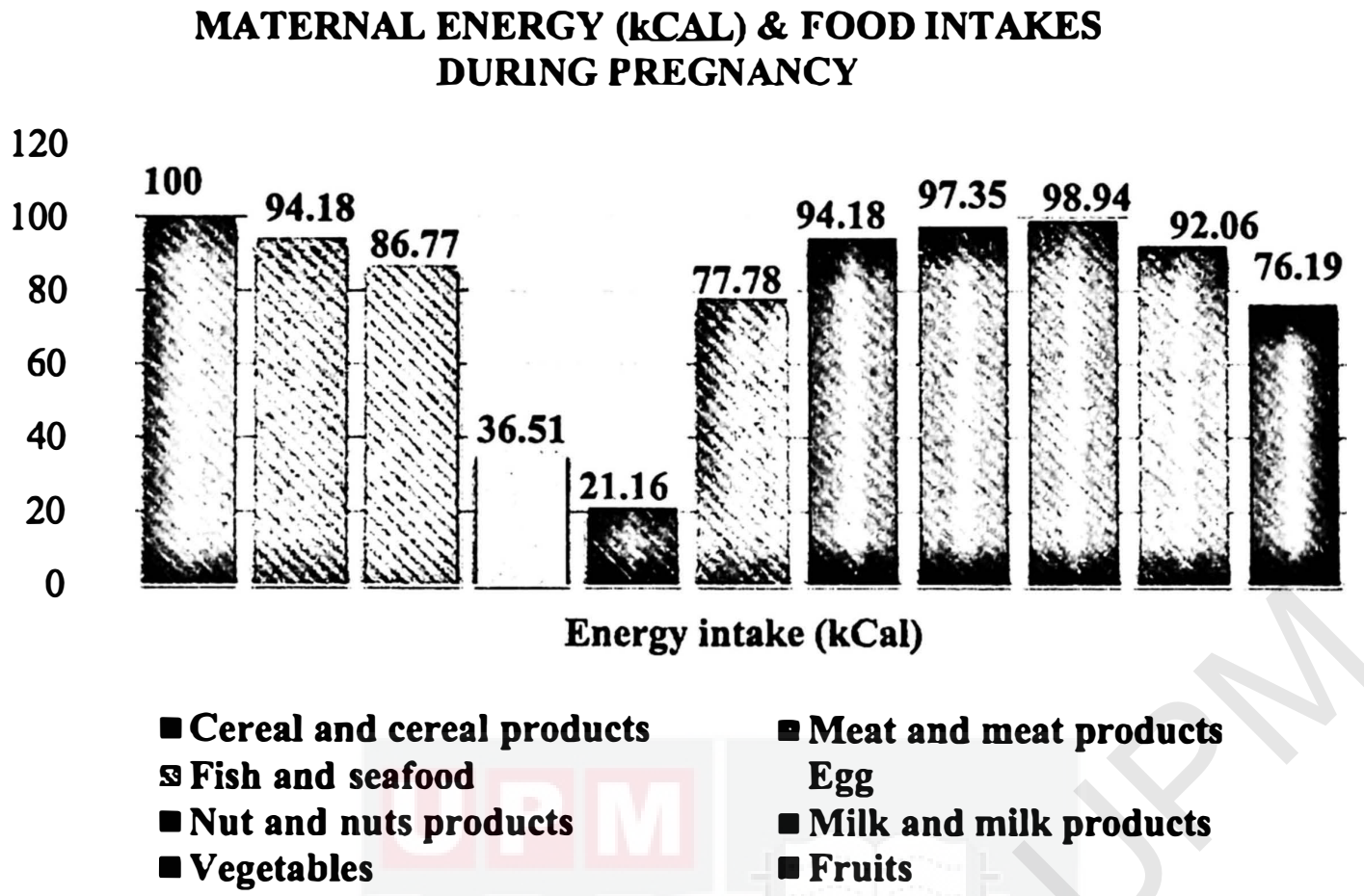

Figure 4.1 shows the maternal energy (kCal) and food intakes during pregnancy

The mean of perceived stress of the pregnant women in this study was 16.69 (SD= 4.51) (Table 4.7), similar findings were reported by Parcells (2010), the mean of perinatal distress was 15.1 among healthy pregnant women in Northern Ireland. Therefore, the total mean showed that the respondents were facing moderate perceived stress. The mean of perceived stress for first trimester, second trimester and third trimesters were 16.92 ± 4.31, 17.24 ± 4.63 and 16.04 ± 4.42 respectively. About half of the pregnant women in first trimester were facing moderate level of perceived stress (57.7%) followed by third trimester (57.0%) and second trimester (48.3%) with total percentage of moderate of perceived stress 57.7%. However, study reported by Nagandla et al, (2016), the prevalence of stress for second trimester and third trimester were 23.6% and 24.7% which were lower compared to this current study. In contrary, Da Costa et al., (1999) reported

that the lowest score of stress were observed in second trimesters among non-Hispanic women in Canada while in this current study, pregnant women in second trimester (17.2) were shown to have higher perceived stress compared the first and the third trimester.

Table 4.7 The distribution and mean perceived stress of pregnant women by trimesters

Variables	Mean ± SD / n (%)			
	1st trimester (n= 26)	2nd trimester (n=84)	3rd trimester (n=79)	Total (n=189)
Perceived stress score	16.92 ± 4.31	17.24 ± 4.63	16.04 ± 4.42	16.69 ± 4.51
Low	4 (15.4)	9 (10.7)	16 (20.3)	29 (15.3)
Moderate	15 (57.7)	49 (48.3)	45 (57.0)	109 (57.7)
High	7 (26.9)	26 (31.0)	18 (22.8)	51 (27.0)

Table 4.8 shows the perceived stress scale items that evaluate stress level experienced by pregnant mothers for the past month. Based on table above, 58.7% of the pregnant mothers were feeling upset for sometimes and quarter of them were fairly often to very often (20.2%). None of them were unable to control on what happened in their life for scale very often. Quite high percentage of pregnant women who felt stress from sometimes to very often or nervous for the past month, (55.0%), (11.1%) and (2.1%) respectively. Besides, more than half of pregnant women sometimes could not cope on things that they have to do (53.4%) and 31.0% of the respondents were fairly often feeling irritated in their life. However, majority of the pregnant mothers perceived all of the items as "sometimes".

Table 4.8 Perceived stress scale items (n=189)

	Perceived stress scale items	Mean ± SD	n (%)				
			Never	Almost Never	Sometimes	Fairly Often	Very Often
B1	In the last month, how often have you been upset because of something that happened unexpectedly?	1.65 ± 0.97	35 (18.5)	23 (12.2)	111 (58.7)	14 (17.4)	6 (3.2)
B2	In the last month, how often have you felt that you were unable to control the important things in your life?	1.39 ± 0.95	47 (24.9)	38 (20.1)	88 (46.6)	16 (8.5)	0 (0.0)
B3	In the last month, how often have you felt nervous and "stressed"?	1.63 ± 0.99	38 (20.1)	22 (11.6)	104 (55.0)	21 (11.1)	4 (2.1)
B4	In the last month, how often have you felt confident about your ability to handle your personal problems?	2.33 ± 1.09	17 (19.0)	17 (19.0)	65 (34.4)	67 (35.4)	23 (12.2)
B5	In the last month, how often have you felt that things were going your way?	2.21 ± 0.89	13 (6.9)	12 (6.3)	95 (50.3)	60 (31.7)	9 (4.8)

Table 4.8 Perceived stress scale items (n=189) (Continued)

Perceived stress scale items		Mean ± SD	n (%)				
			Never	Almost Never	Sometimes	Fairly Often	Very Often
B7	In the last month, how often have you been able to control irritations in your life?	2.24 ± 0.88	10 (5.3)	15 (7.9)	94 (49.7)	60 (31.7)	10 (5.3)
B8	In the last month, how often have you felt that you were on top of things?	2.16 ± 0.85	13 (6.9)	13 (6.9)	97 (51.3)	63 (33.3)	3 (1.6)
B9	In the last month, how often have you been angered because of things that were outside of your control?	1.88 ± 0.93	18 (9.5)	34 (18.0)	95 (50.3)	36 (19.0)	6 (3.2)
B10	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	1.56 ± 0.92	27 (14.3)	54 (28.6)	88 (46.6)	15 (7.9)	5 (2.6)

4.6 HYPOTHESES TESTING RESULTS

There are four hypotheses to be tested in the present study which are as follows:

1. Socio-demographic factors (ethnicity, maternal age, gestational weeks, marital status, educational level, maternal occupation, spouse occupation status, maternal income, total household income, number of children and pregnancy morbidities) with perceived stress among pregnant women.

Null hypotheses = There are no significant association between socio-demographic factors with perceived stress among pregnant women.

The association between socio-demographic factor and perceived stress are described in Table 4.9. The result showed no significant association between socio-demographic factors with perceived stress. For instances, maternal age ($r = 0.007$, $p = 0.920$), gestational weeks ($r = 0.112$, $p = 0.126$), educational level ($\chi 2 = 0.139$, $p = 0.709$), maternal occupation ($\chi 2 = 1.70$, $p = 0.637$), maternal income ($\chi 2 = 0.791$, $p = 0.673$), total household income ($\chi 2 = 0.020$, $p = 0.887$), ethnicity ($p = 0.277$), marital status ($p = 0.395$), spouse occupation status ($p = 0.716$) and number of children ($\chi 2 = 1.321$, $p = 0.516$). Medical factors such as pregnancy morbidities ($\chi 2 = 1.960$, $p = 0.658$) also was not significantly associated with perceived stress.

This findings was corroborate with study reported by Lau and Yin, (2011) whereby maternal age was significantly associated with perceived stress. In the same study explained that Macao pregnant women who aged 25 years and below were prone to encounter high perceived stress which was similar with previous study reported by Glazier et al., 2004. This is because the younger age of pregnant women tend to adjust different role after pregnancy compared to older age of pregnant women. Besides, younger pregnant women also having imbalance of emotion and maturity where they must face to support their life and baby (Kelly, 2006). However, Albalawi and Alsalamah, (2017) mentioned that there was no significant correlation between maternal age and perceived stress which in line with current study. A possible reason could be more than half of the pregnant mothers in this current study were aged more than 25 years old. Thus, the association between maternal age and perceived stress could not be determined.

Moreover, there was no significant association between chronic diseases and perceived stress in this current study. This finding were contradicted with previous study reported by Albalawi & Alsalamah, (2017) the gestational diabetes (GDM) pregnant women tend to be stressed during pregnancy as they fear of having highly risky pregnancies as well as worry to control the GDM or other diseases through diet. Furthermore, GDM had been known to act as a stress factor which could contribute to the seriousness of mothers and baby health (Baz & Riveline, 2016; Carolan & Midwifery, 2013; Hayase et al., 2014). Not only that, the cascades of GDM could also easily develop into other diseases such as hypertension, preeclampsia, dyslipidemia and type 2 diabetes when the pregnant women

get older (Sürücü et al., 2018). Thus, they were more prone to face stress compared to healthy pregnant women (Lawson et al., 1994).

In contrary, no or low income were correlated with perceived stress. This finding was revealed when Albalawi & Alsalamah, (2017) conducted study among Saudi Arabian pregnant women and had been supported by Silveira et al., (2013) among Hispanic pregnant women. Moreover, pregnant women who came from low income background which categorized as vulnerable group were more likely to face that daily struggles (Renzaho & Oldroyd, 2014). Furthermore, Kingston et al. (2012) reported that low income family of the pregnant women were found to have higher stress level compared to higher income family. Besides, working women in Bangladesh banking sector that received low salary had become one of the major reason to the increase in stress (Das, 2016). This is due to bigger sample sizes of previous study, 438 of pregnant women compared to this current sample sizes. However, possible explanation could be the bigger sample size of previous study (438 pregnant women) that showed the correlation between income and perceived stress.

Other than that, educational level were not significantly correlated with perceived stress both from secondary and below or tertiary in this current study. However, previous findings showed that having lower educational level were significantly correlated with higher perceived stress (Lau & Yin, 2011). As reported by Lau and Yin, (2011), Carolan, (2013), pregnant women who had higher level of education were able to manage their

stress life events better compared to lower educational level. Pantha et al., (2017) also mentioned that around 1 in 4 pregnant women were faced stress and it was decreasing until 6% as the educational level increase from primary to tertiary. A possible explanation could be used of active coping strategies (active coping, religious coping, positive reframing, planning and acceptance) among the pregnant women with stress. Majority of pregnant women in this current study were Muslim and use religion coping strategies more than other religions in order to reduce stress (Al-Dubai, Al-Naggar, Alshagga, & Rampal, 2012).

Table 4.9 The association of socio-demographic factors and perceived stress among pregnant women.

Variables	Perceived Stress (n = %)		*r*	$\chi 2$	p-value
	Low	Moderate & High			
Ethnicity					
Malays	25 (86.2)	148 (92.5)			0.277
Others	4 (13.8)	12 (7.5)			
Maternal age			0.007		0.920
Gestational weeks			0.112		0.126
Marital status					
Married	28 (96.6)	158 (98.8)			0.395
Not married/divorce/widow	1 (3.4)	2 (1.3)			
Educational Level					
Secondary and below	10 (34.5)	61 (38.1)		0.139	0.709
Tertiary	19 (65.5)	99 (61.9)			
Maternal occupation					
Government sector	7 (24.1)	42 (26.3)		1.70	0.637
Private sector	9 (31.0)	61 (38.1)			
Free lance	3 (10.3)	8 (5.0)			
Housewife	10 (34.5)	49 (30.6)			

Table 4.9 The association of socio-demographic factors and perceived stress among pregnant women. (Continued)

Variables	Perceived Stress (n = %)		*r*	$\chi 2$	p-value
	Low	Moderate & High			
Spouse occupation status	29 (100.0)	158 (98.8)			
Yes	0 (0.0)	2 (1.3)			0.716
No					
Maternal income					
No income	10 (34.5)	50 (31.3)		0.791	
RM 500 – RM 3000	10 (34.5)	69 (43.1)			0.673
> RM 3001	9 (31.0)	41 (25.6)			
Total household income	10 (34.5)	53 (33.1)		0.020	0.887
RM 0 - RM 3000	19 (65.5)	107 (66.9)			
RM 3001 and above					
Number of children					
0	15 (51.7)	65 (40.6)		1.321	
1	5 (17.2)	30 (18.8)			0.516
>1	9 (31.0)	65 (40.6)			
Pregnancy morbidities				1.96	0.658
Yes	7 (24.1)	45 (28.1)			
No	22 (75.9)	115 (71.9)			

2. Social support with perceived stress among pregnant women

Null hypotheses = There is no significant association between social support and perceived stress among pregnant women.

Information about association of perceived social support and physical activity with perceived stress of respondents are shown in Table 5.0. There was a significant association between perceived social supports with perceived stress (r = -0.241, p <0.001). This findings was similar to previous study such as Iranzad et al., (2014), Monroe et al., (1986) on American pregnant women and Holahan and Moss. (1991), on pregnant women of Texas, the USA whereby perceived social support was significantly associated with stress among pregnant women. (r = -0.5, p<0.001). It seems that women that received high social support from their husband, friends, colleagues and family were found to manage stress better. In addition, women who were having access to free time at work places were also can reduced work-family conflicts. To be noted that, more than half of pregnant women in this study were working thus, having free time at work could relieve their feelings from stress. This was supported by Anna et al., 2015; Lau and Yin, 2011. Other than that, social support were found to acts as buffer that can slow down the effect stress and provides necessary skills to deal with it (Ajala & Olorunsaiye, 2009). And one of it was being married found to reduce stress level among pregnant women as they get higher social support from their husband regardless of working or not due to having good marital relationship between husband and wife (Dapare & Abass, 2015). Besides, another study mentioned that pregnant women portrayed protective effect of social support at the time they having stress (Davis et al., 1998). Thus, it prevents from demonstrate stress

disorders or moderate the severity of psychological symptoms (Aranda et al., 2001). Generally it is known that maternal stress during pregnancy could lead to complications to their fetus and also mental health problems. Logsdon et al., (1994) mentioned that half of the pregnant women during pregnancy were exposed to psychological health problem. Therefore, an appropriate social support especially from husband and then society during pregnancy were able to reduce the risk of stress by 40%.

Table 5.0 Pearson correlation between perceived social support and perceived stress among pregnant women.

Variable	Perceived stress	
	r value	p-value
Perceived social support	-0.241**	0.001

**correlation is significant at the 0.001 level

3. Physical activity and perceived stress among pregnant women.

Null hypotheses = There is no significant association between physical activity and perceived stress among pregnant women.

Table 5.1 shows the information on association between physical activity and perceived stress. There was no significant association between physical activity and perceived stress. This finding was consistent with Evenson and Wen (2011) whereby the study do not showed any correlation between physical activity and stress among pregnant women. This is due to employed women were engaged in vigorous physical activity more often than unemployed as they had their own dynamic lifestyle (Evenson et al., 2002). Moreover, highly educated women as well as having a high social and economic status

were more engaged in any form of physical activity (Guimaraes & Baptista, 2013; Kwasniewska, Kaleta, Dziankowska-Zaborszczyk, Drygas, & Makowiec- Da˛browska, 2009). Thus, they were more independent in managing their stress better due to knowledge that they had (Carolan, 2013). Therefore, there was no association between physical activity and perceived stress. Besides, in the same study also reported that there was declining trend of being physically active throughout the pregnancy which was more than half of the pregnant women (57.1%) were practicing sedentary behavior. Chasan-Taber al., (2007) also added that women reduce their physical activity during pregnancy. However, there was limited findings that showed correlation between physical activity and stress among pregnant women.

Table 5.1 Pearson correlation between physical activity and perceived stress among pregnant women.

Variable	Perceived stress	
	r value	p-value
Physical activity		
Total activity	-0.043	0.560
Sedentary activity	-0.045	0.540
Light intensity activity	0.043	0.553
Moderate intensity activity	-0.072	0.323
Vigorous intensity activity	0.107	0.143
By type of activity		
Household/caregiving	0.085	0.243
Occupational	-0.073	0.321
Sports/exercise	-0.109	0.135

4. Dietary intake and perceived stress among pregnant women.

Null hypotheses = There is no association between dietary intake and perceived stress among pregnant women.

Table 5.2 shows the association between food group energy intakes with perceived stress score. Fat was significantly associated with perceived stress score ($r = 0.145$, $p<0.05$) as well as total energy intake ($r = 0.150$, $p<0.005$) while the other food group were not significantly associated with perceived stress score. It can be concluded that pregnant women who consumed food that high in fat or high energy dense food could increase the stress and mood disturbance. This findings was supported by Janice, (2011) whereby diets high in fats, refined grains, oil will elevate C-reactive protein in blood which cause the inflammation that promote induction of stress hormone (cortisol). Besides, Fowles et al., (2011) also reported that pregnant women who practicing poor eating habit were more likely to have a high percent of total calories that coming from fat sources. This may happened due to mood disturbance of pregnant women whereby they could experience extreme episodes of craving for sugary foods as well as food that high in fat to achieve relief from stress (Paskulin et al., 2017).

Table 5.2 Pearson correlation between dietary intakes with perceived stress among pregnant women.

	Perceived stress	
Nutrient energy intake	**r value**	**p-value**
Carbohydrates	0.110	0.131
Protein	0.067	0.359
Fat	0.145*	0.047
Total fiber	0.038	0.604
Total energy intake	0.150*	0.039
Cereal and cereal products	0.138	0.059
Meat and meat products	0.003	0.972
Fish and seafood	0.044	0.543
Egg	0.063	0.388
Nut and nuts products	0.024	0.743
Milk and milk products	-0.018	0.803
Vegetables	-0.022	0.767
Fruits	0.000	0.995
Confectionaries	0.142	0.051
Drinks	0.106	0.146
Oils and fat	0.047	0.521

*Correlation is significant at the 0.05 level

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Almost 9 in 10 pregnant women in this study were found to have moderate to high perceived stress throughout the pregnancy especially in second trimester while about 2 in 10 pregnant women were found to have low perceived stress during first trimester. Perceived social support and dietary intakes were significantly associated with perceived stress among pregnant women. The current study revealed that low level of social support was associated with high perceived stress among pregnant women. Therefore, pregnant women who have high level of stress are likely due to having less social support, eating a lot of sugary and high fat food, which these factors may underlies the importance of targeting these women for intervention program to learn on how to cope the stress better.

5.2 Limitations of study

This study was a cross-sectional design which do not measure the causal effect associations regarding perceived stress among pregnant women. Furthermore, self-administered questionnaires were being used in this study. Thus, under-reporting or over-reporting may occur. Besides, this study only focusing on certain factors that may correlate with perceived stress. Hormonal and other physical changes over course of pregnancy may have affected the women's coping ability with stressful life events and

their mood. The data from this study also could not represent the population of pregnant women as they were recruited from specific geographic locations.

5.3 Recommendations

This current study reported that the prevalence of stress of pregnant women is 57.7% in Wilayah Persekutuan Kuala Lumpur and Putrajaya which is a bit higher compared to previous study reported by Pantha et al., (2017), 6% to as high as 52.9% in developing countries. Therefore, intervention programmes should be structured targeting stress among pregnant women. It should be considered on how to receive social support from husband, family and others as well as limiting the intake of high fat diet to practicing healthy lifestyle. For future study, there is a need to include all possible factors such as parity, anthropometry measurement, sleep disturbance and environmental factors that may correlate with stress among pregnant women. Besides, confounding factors should be consider such as hormonal and other physical changes over the course of pregnancy that may affect women's ability to cope with stressful life events and their mood. Moreover, an effective and continuous nutritional education targeting on psychological health problem of pregnant women are required to serve better management of stress. More future study on the association of social support and dietary intake with mental health problem are needed.

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APPENDIX 1

QUESTIONNAIRE

Reference no.

UNIVERSITI PUTRA MALAYSIA

FAKULTI PERUBATAN DAN SAINS KESIHATAN
JABATAN PEMAKANAN DAN DIETETIK

PKK 4999
PROJEK ILMIAH TAHUN AKHIR

SULIT

BORANG SOAL SELIDIK

Faktor- faktor yang berkaitan dengan tekanan dalam kalangan wanita hamil di Klinik Kesihatan, Wilayah Persekutuan

Penyelidik : FARAH NURDIANA BINTI BORHAN 183117
Program : B. Sc (Nutrition and Community Health)
Penyelia : DR. NURZALINDA ZABAHAR @ ZABAHA

Semua maklumat yang diberikan di sini adalah dirahsiakan dan hanya digunakan untuk tujuan akademik sahaja. Kejayaan kajian ini amat bergantung kepada kerjasama pihak tuan/ puan dalam menjawab kesemua soalan yang dikemukan. Segala kerjasama tuan/puan berikan saya dahului dengan ucapan ribuan terima kasih.

Reference no. ☐☐☐

Arahan:

Kajian ini dijalankan untuk tujuan akademik. Semua maklumat akan disimpan secara peribadi dan sulit. Terima kasih atas kerjasama anda dalam menjawab soal selidik ini.

BAHAGIAN A: SOSIO-DEMOGRAFI

MAKLUMAT PERIBADI INDIVIDU Sila pilih jawapan berkenaan	
Berapa umur anda?	
Bila tarikh lahir anda ?	____/____/____ *(hh/bb/tt)*
Nombor telefon rumah atau mudah alih yang boleh dihubungi	
Apakah bangsa anda ?	☐ Melayu ☐ Cina ☐ India ☐ Lain-lain .....
Apakah taraf perkahwinan anda ?	☐ Berkahwin ☐ Bercerai ☐ Janda ☐ Belum berkahwin
Apakah tahap pendidikan tertinggi anda ?	☐ Tidak pernah bersekolah ☐ Sekolah rendah ☐ Sekolah Menegah ☐ Diploma ☐ Sarjana muda ☐ Sarjana ☐ Kedoktoran (PhD) ☐ Lain-lain

Adakah anda….?	☐ Pekerja kerajaan ☐ Pekerja swasta ☐ Bekerja sendiri
Adakah pasangan anda berkerja?	☐ Ya ☐ Tidak
Pendapatan dari bekerja/ gaji/ upah	RM _____ ☐ < RM 500 ☐ RM 500 – RM 1000 ☐ RM 1001 – RM 2000 ☐ RM 2001 – RM 3000 ☐ RM 30001 – RM 4000 ☐ > RM 4000
Jumlah Pendapatan isi rumah	RM _____ ☐ < RM 500 ☐ RM 500 – RM 1000 ☐ RM 1001 – RM 2000 ☐ RM 2001 – RM 3000 ☐ RM 30001 – RM 4000 ☐ > RM 4000
Bilangan anak ?	☐ 1 ☐ 0 ☐ > 1, Sila nyatakan: _____
Bilangan minggu kehamilan ?	

Adakah anda menghidapi penyakit tersebut ?	☐ **Anemia** ☐ **Kencing manis** ☐ **Darah tinggi** ☐ **Penyakit jantung** ☐ **Lain-lain, sila nyatakan_____** ☐ **Tiada**

Reference no.

BAHAGIAN B: *PERCEIVED STRESS SCALE* (PSS-10 ITEM) VERSI BAHASA MELAYU

Soalan-soalan pada skala ini bertanya tentang perasaan dan fikiran anda sejak bulan lalu. Dalam setiap kes, anda akan diminta untuk menunjukkan dengan membulatkan seberapa kerapkah yang anda merasa atau berfikir dengan cara tertentu.

0 = Tidak pernah; 1 = Hampir Tidak pernah; 2 = Kadang-kadang; 3 = Agak kerap; 4 = Sangat kerap

Pada bulan lalu, berapa kerapkah…	Tidak pernah	Hampir Tidak pernah	Kadang-kadang	Agak kerap	Sangat kerap
1. anda merasa kecewa kerana sesuatu yang terjadi di luar jangkaan anda?	0	1	2	1	4
2. anda merasa bahawa anda tidak mampu mengawal isu-isu penting dalam hidup anda?	0	1	2	3	4
3. anda merasa gugup dan tertekan ("stres")	0	1	2	3	4
4. anda merasa yakin tentang kemampuan anda untuk menangani masalah-masalah peribadi anda?	0	1	2	2	3
5. anda merasa bahawa semuanya berjalan mengikut rancangan anda?	0	1	2	3	4
6. anda mendapati bahawa anda tidak mampu mengatasi semua perkara yang anda perlu lakukan?	0	1	2	3	4
7. anda mampu mengawal perasaan marah dalam hidup anda?	0	1	2	3	4
8. anda merasa bahawa anda berjaya di atas segala sesuatu?	0	1	2	3	4
9. anda menjadi marah kerana hal-hal yang berada di luar kawalan anda?	0	1	2	3	4
10. anda merasa kesulitan yang menimbun begitu tinggi sehingga anda tidak mampu menanganinya?	0	1	2	3	4

Reference no. | | | |

BAHAGIAN C: MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT

(MSPSS-M) VERSI BAHASA MELAYU

Sila baca kenyataan-kenyataan berikut. Bulatkan nombor mengikut skala di bawah

1	2	3	4	5	6	7
Tersangat tidak setuju	Sangat tidak setuju	Tidak setuju	Berkecuali	Setuju	Sangat setuju	Tersangat setuju

Soalan	Penyataan	Tersangat sangat tidak setuju	Sangat tidak bersetuju	Tidak bersetuju	Berkecuali	Setuju	Sangat setuju	Tersangat setuju
Q1	Ada seseorang yang istimewa bersama saya bila saya dalam keadaan yang memerlukan.	1	2	3	4	5	6	7
Q2	Ada seseorang yang istimewa untuk saya berkongsi kegembiraan dan kesedihan.	1	2	3	4	5	6	7
Q3	Keluarga saya cuba sedaya-upaya untuk menolong saya.	1	2	3	4	5	6	7
Q4	Saya mendapat pertolongan dan sokongan emosi yang saya perlukan daripada keluarga	1	2	3	4	5	6	7
Q5	Saya mempunyai seseorang yang istimewa yang benar-benar membuat saya selesa.	1	2	3	4	5	6	7
Q6	Kawan-kawan saya cuba sedaya-upaya untuk menolong saya.	1	2	3	4	5	6	7

Q7	Saya boleh berharap kepada kawan-kawan saya apabila sesuatu hal yang tidak baik berlaku.	1	2	3	4	5	6	7
Q8	Saya boleh bercerita tentang masalah saya dengan keluarga	1	2	3	4	5	6	7
Q9	Saya mempunyai kawan-kawan yang saya boleh berkongsi kegembiraan dan kesedihan.	1	2	3	4	5	6	7
Q10	Ada seseorang yang istimewa dalam hidup saya yang mengambil berat tentang perasaan saya	1	2	3	4	5	6	7
1	Keluarga saya bersedia untuk menolong saya membuat keputusan	1	2	3	4	5	6	7
Q12	Saya boleh bercerita tentang masalah saya dengan kawan-kawan saya	1	2	3	4	5	6	7

Reference no. ☐☐☐

BAHAGIAN D: *PREGNANCY PHYSICAL ACTIVITY QUESTIONNAIRES* (PPAQ)

VERSI BAHASA MELAYU

Sangat penting untuk memberitahu kami tentang diri anda secara jujur. Tidak ada jawapan yang **Betul** dan **Salah**. Kami hanya ingin tahu tentang perkara yang anda lakukan semasa trimester ini.

1. Tarikh hari ini: ☐☐ / ☐☐ / ☐☐☐☐
   Hari Bulan Tahun

2. Hari pertama bagi hari terakhir period (__ __/ __ __/ __ __) (*hh/bb/tt*)
   ☐ Saya tidak tahu

3. Bila tarikh bersalin? (__ __/ __ __/ __ __) (*hh/bb/tt*)
   ☐ Saya tidak tahu

Sepanjang trimester ini, apabila anda **TIDAK** bekerja berapa kali anda biasanya meluangkan masa?

4. Menyediakan makanan (masak, tetapkan hidangan basuh meja)
   - ☐ Tiada
   - ☐ Kurang dari ½ jam sehari
   - ☐ ½ hingga 1 jam sehari
   - ☐ 1 hingga 2 jam sehari
   - ☐ 2 hingga 3 jam sehari
   - ☐ 3 jam atau lebih untuk sehari

5. Berpakaian, mandi, memberi makan anak semasa anda **duduk**
   - ☐ Tiada
   - ☐ Kurang dari ½ jam sehari
   - ☐ ½ hingga 1 jam sehari
   - ☐ 1 jam hingga 2 jam sehari
   - ☐ 2 hingga 3 jam sehari
   - ☐ 3 jam atau lebih untuk sehari

6. Berpakaian, mandi, memberi makan anak semasa anda **berdiri**

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Sepanjang trimester ini, apabila anda **TIDAK** bekerja berapa kali anda biasanya meluangkan masa?

7. Bermain dengan anak semasa anda **duduk atau berdiri**

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

8. Bermain dengan anak semasa anda **berjalan atau berlari**

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

9. Membawa anak

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 jam hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

10. Menjaga anak dewasa

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Sepanjang trimester ini, apabila anda **TIDAK** bekerja berapa kali anda biasanya meluangkan masa?

11. Duduk dan menggunakan computer atau menulis, apabila **tidak** bekerja

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

12. Menonton televisyen atau video

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

13. Duduk dan membaca, bercakap atau bercakap atas panggilan, apabila **tidak** bekerja

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 jam hingga 2 jam sehari
- ☐ 2 jam hingga 3 jam sehari
- ☐ 4 jam atau lebih untuk sehari

14. Bermain dengan haiwan peliharaan

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Sepanjang trimester ini, apabila anda **TIDAK** bekerja berapa kali anda biasanya meluangkan masa?

15. Pembersihan ringan, (mengemas katil, cucian, seterika baju, meletakkan barang di tempat lain)

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

16. Berbelanja (makanan, pakaian, atau barang lain)

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

17. Permbersihan berat (vakum, mengemop, menyapu, mengelap tingkap)

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 jam hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

18. Memotong rumput di atas pemotong rumput beroda

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

19. Memotong rumput menggunakan pemotong rumput beroda, berkebun, meraih

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Sepanjang trimester ini, apabila anda **TIDAK** bekerja berapa kali anda biasanya meluangkan masa?

20. Berjalan **perlahan** untuk ke tempat (seperti ke bas, bekerja atau melawat) **Bukan** untuk beriadah atau bersenam

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

21. Berjalan laju untuk ke tempat (seperti ke bas, bekerja atau melawat) **Bukan** untuk beriadah atau bersenam

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 jam hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

22. Memandu atau menunggang di dalam kereta atau bas

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Untuk Beriadah atau Bersenam

Sepanjang trimester ini, apabila anda **TIDAK** bekerja berapa kali anda biasanya meluangkan masa?

23. Berjalan **perlahan** untuk beriadah atau bersenam

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

24. Berjalan **lebih laju** untuk beriadah atau bersenam

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

25. Berjalan **laju menaiki bukit** untuk beriadah atau bersenam

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 jam hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

26. Joging

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

27. Kelas bersenam untuk ibu mengandung

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

28. Berenang

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

29. Menari

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Melakukan aktiviti lain untuk beriadah atau bersenam? Mohon maklumkan kepada kami.

30. _____

Nama aktiviti

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

31. _____

Nama aktiviti

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Isikan bahagian seterusnya jika anda bekerja untuk gaji, sebagai sukarelawan, atau jika anda seorang pelajar. Sekiranya anda seorang suri rumah, tidak bekerja atau tidak dapat bekerja, anda tidak perlu melengkapkan bahagian terakhir ini.

Sepanjang trimester ini, berapa kali biasanya anda meluangkan masa?

32.Duduk di tempat kerja

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

33. Berdiri atau berjalan perlahan di tempat kerja sambil membawa barang (lebih berat dari 1 gelen jag susu)

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 jam hingga 2 jam sehari
- ☐ 2 jam hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

Sepanjang trimester ini, berapa kali biasanya anda meluangkan masa?

34. Berdiri atau berjalan perlahan di tempat kerja tidak membawa sebarang barang

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

35. Berjalan cepat di tempat kerja sambil membawa barang (lebih berat dari 1 gelen jag susu)

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

36. Berjalan cepat di tempat kerja tidak membawa sebarang barang

- ☐ Tiada
- ☐ Kurang dari ½ jam sehari
- ☐ ½ hingga 1 jam sehari
- ☐ 1 hingga 2 jam sehari
- ☐ 2 hingga 3 jam sehari
- ☐ 3 jam atau lebih untuk sehari

-Terima Kasih-

BAHAGIAN E: PENGAMBILAN MAKANAN MENGIKUT KUMPULAN MAKANAN

1. Dalam bahagian ini responden akan ditanya soalan terbuka samada pernah atau tidak makan makanan yang telah disenaraikan. Tuliskan angka dalam kolum bilangan kali diambil dalam **Per Hari** atau **Per Minggu** atau **Per Bulan**. (Pastikan hanya satu kolum sahaja yang diisi). Jika makanan yang tersenarai tidak diambil, isikan '0' pada kolum **Per Bulan.**
2. Berapa banyak sajian setiap kali makan merujuk kepada bilangan hidangan yang diambil setiap kali dimakan. Contohnya, jika responden makan buah betik, tanyakan berapa potong buah betik biasanya dimakan setiap kali. Jika responden menjawab makan dua potong buah betik, isikan "2" dalam ruangan jawapan. Ini kerana satu sajian ialah satu potong buah betik.
3. Setiap jenis makanan telah diberikan ukuran hidangan tertentu berpandukan senarai berat makanan dalam ukuran isi rumah. Ukuran hidangan ini adalah berdasarkan saiz sederhana.

1. *In this section, respondents will be asked questions on whether they have eaten or not the type of foods listed. Write down numbers in the column how many times were consumed whether **Daily, Weekly** or **Monthly**.*
2. *How many times each serving were taken refers to how many of these foods were eaten by respondents for each time. For example, if respondents eat papaya, ask them how many of those foods were taken each time. If the respondents answered two slices, fill in "2" in the answer space. This is because each serving equal to one slice of papaya.*
3. *Every type of food has been given their appropriate list of weight of these food in household measurement. These meal measurement was based on regular size.*

Kod	Jenis Makanan *Type of food*	Kekerapan Pengambilan *Frequency of intake*				Saiz Sajian (pilih 1 ukuran) *Reference of meal size*	Jumlah Sajian (setiap kali) *Total serving (each time eaten)*	Catatan *Notes*
		Berapa kali sehari *Daily*	Berapa kali Seminggu *Weekly*	Berapa kali Sebulan *Monthly*	Tidak Makan *Never*			
A	**Bijirin & Hasil bijirin** *Cereals and cereal products*							
A1	Nasi putih/ *White rice*					Mangkuk cina *Chinese bowl*		
						Cawan / *Cup*		
						Senduk / *Scoop*		
A2	Nasi goreng,nasi lemak,nasi ayam, Nasi dagang,nasi kerabu, nasi minyak *Flavoured rice*					Mangkuk cina *Chinese bowl*		
						Cawan / *Cup*		
						Senduk / *Scoop*		
A3								

	Pulut putih, tapai pulut & kelapa parut *Glutinous rice, fermented rice & grated coconut*					Mangkuk cina *Chinese bowl*		Kelapa parut: s/makan
						Cawan / *Cup*		
						Senduk *Scoop*		
A4	Mi kuning, mi hun, kuey teow, laksa *Noodles*					Mangkuk cina *Chinese bowl*		
						Cawan / *Cup*		
						Senduk / *Scoop*		
A5	Roti putih, roti mil, bun *White bread, wholemeal bread, bread bun*					Keping / *Slices*		
A6	Roti canai & kuah dal/kari					Keping / *Slices*		Dal/kari: s/makan
A7	Jagung/ *Corn*					Tongkol		
						Cawan / *Cup*		
A8	Bijirin tersedia perlu dibancuh *Cereal grains prepared with water*					Cawan / *Cup*		
B	**Poultri, daging & ikan / *Poultry, meat & fish***							
B1	Ayam/ *Chicken*					Ketul / *Pieces*		
B2	Daging / *Meat*					Ketul / *Pieces*		
B3	Hati ayam, hati lembu *Internal organs*					Ketul / *Pieces*		
B4	Ikan kembung, selar, selayang, Tongkol (aye), tenggiri, kerisi *Mackerel, scad, sardine, albacore tuna, Spanish mackerel, bream fish*					Ekor / *Whole*		
						Keping / *Pieces*		

B5	Keli, patin *Catfish, silver catfish*					Ekor / *Whole*		
B6	Ikan bilis / *Anchovies*					Sudu makan *Tablespoon*		
B7	Ikan masin / ikan kering *Dried fish*					Ekor / *Whole*		
B8	Ikan sardin, tuna dalam tin *Sardine, canned tuna*					Ekor / *Whole*		
B9	Bebola ikan *Fish ball*					Biji / *Pieces*		
B10	Keropok ikan & lekor					Keping / *Pieces*		
B11	Udang / *Prawn*					Ekor / *Whole*		
B12	Sotong / *Squid*					Ekor / *Whole*		
B13	Kerang / *Shellfish*					Ekor / *Whole*		
						Sudu makan / *Tablespoon*		
						Cawan / *Cup*		
B14	Telur ayam / *Hen egg*					Biji / *Pieces*		
B15	Telur masin / *Salted egg*					Biji / *Pieces*		
B16	Solok lada					Biji		
C	**Susu & hasil tenusu / *Milk & Dairy products***							
C1	Susu tepung ibu hamil (vanila, coklat) *Powdered milk for pregnant women*					Senduk / *Scoop*		
C2	Susu tepung					Sudu makan *Tablespoon*		

	(penuh krim, tanpa lemak) *Powdered milk (full cream,non fat)*					Senduk / *Scoop*		
C3	Susu UHT lembu, kambing (penuh krim, tanpa lemak) *Cow and goat UHT milk (full cream,non fat)*					Cawan / *Cup*		
						Gelas / *Glass*		
						Kotak / *Box*		
C4	Yogurt					Cawan / *Cup*		
C5	Keju / *Cheese*					Keping / *Slices*		
D	**Kekacang & hasilnya / *Legumes & legumes products***							
D1	Kacang tanah, kacang kuda, dal kuning kacang hijau, biji gajus *Legumes*					Sudu makan *Tablespoon*		
						Cawan *Cup*		
D2	Air soya *Soybean*					Cawan / *Cup*		
						Kotak / *Box*		
E	**Sayur-sayuran / *Vegetables***							
E1	Sawi (lobak), kangkung, kailan, bayam, pucuk ubi, pucuk paku (masak) *Leafy green vegetables*					Cawan / *Cup*		
						Sudu makan *Tablespoon*		
E2	Kobis bulat, kobis bunga (masak) *Cabbages*					Cawan / *Cup*		
						Sudu makan *Tablespoon*		
E3	Kacang panjang, kacang botol *Other types of legumes*					Cawan / *Cup*		
						Sudu makan / *Tablespoon*		

E4	Ubi kentang, ubi keledek, lobak merah *Tuber(potatoes, sweet potatoes, carrots)*					Biji / *Pieces*		
E5	Timun, petola (sayur teneh), tomato *Fruit vegetables (cucumber, tomatoes, butternut squash)*					Cawan / *Cup*		
E6	Pegaga, ulam raja *Local fresh salads*					Cawan / *Cup*		
E7	Bawang putih, bawang merah *Garlic, Onion*					Ulas		
F	**Buah-buahan & jus buah / *Fruits & Juices***							
F1	Limau / *Lime*					Biji / *Pieces*		
F2	Epal / *Apple*					Biji / *Pieces*		
F3	Pisang / *Banana*					Biji / *Whole*		
F4	Buah lai / *Pear*					Biji / *Pieces*		
F5	Betik / *Papaya*					Potong / *Slices*		
F6	Tembikai (timun cina) *Watermelon*					Potong / *Slices*		
F7	Tembikai susu (timun susu) *Honey dew*					Potong / *Slices*		
F8	Nenas / *Pineapple*					Potong / *Slices*		
F9	Mangga (pauh) *Mango*					Potong / *Slices* Biji / *Whole*		
F10	Jambu batu *Guava*					Potong / *Slices* Biji / *Whole*		
F11	Jambu air / *Water apple*					Biji / *Whole*		

F12	Manggis / *Mangosteen*					Biji / *Whole*		
F13	Durian					Ulas / *Piece*		
F14	Cempedak, cempedak goreng					Ulas / *Piece*		
F15	Nangka / *Jackfruit*					Ulas / *Piece*		
F16	Rambutan					Biji / *Whole*		
F17	Anggur / *Grape*					Biji / *Pieces*		
F18	Langsat, duku, dokong					Biji / *Pieces*		
F19	Kismis / *Raisin*					Sudu makan *Tablespoon*		
F20	Kurma / *Dates*					Biji / *Pieces*		
F21	Buah jeruk / *Pickled fruits*					Keping / *Pieces*		
						Cawan / *Cup*		
G	**Minuman / *Drinks***							
G1	Air kosong / *Plain water*					Gelas / *Glass*		
G2	Teh / *Tea*					Cawan / *Cup*		
G3	Kopi / *Coffee*					Cawan / *Cup*		
						Sudu the / *Teaspoom*		
G4	Minuman malt (contoh: Milo, Horlick) *Malted drink*					Cawan / *Cup*		
						Sudu makan / *Tablespoon*		
						Sudu the / *Teaspoon*		
G5	Air sirap *Syrup*					Gelas / *Glass*		
G6	Jus buah-buahan *Fruit juice*					Cawan / *Cup*		
G7	Minuman bergas					Gelas/Tin		

	Carbonated drinks					*Glass / Canned*		
G8	Air kacang soya *Soymilk*					Gelas / *Glass*		
						Kotak		
G9	Minuman botani/herba *Herbal / botanical drinks*					Gelas / *Glass*		
						Kotak		
G10	Minuman bertenaga *Energy drinks*					Gelas / *Glass*		
						Kotak		
G11	Air kelapa & isi kelapa muda *Coconut water*					Gelas / *Glass*		
						Bungkus		
H	**Minyak & lemak / *Oils & Fats***							
H1	Margerin / *Margerine*					Sudu the / *Teaspoon*		
H2	Mentega kacang *Peanut butter*					Sudu teh / *Teaspoon*		
						Sudu makan *Tablespoon*		
H3	Santan *Coconut milk*					Sudu makan *Tablespoon*		
						Cawan / *Cup*		
H4	Berapa banyakkah keluarga anda menggunakan minyak masak dalam sebulan? _____kg *How much in average your family use cooking oils in a month ?* Berapa kalikah anda masak dalam sebulan? _____ kali *How many times you cooks in a month ?* Biasanya minyak sebanyak itu digunakan untuk berapa orang ? *Usually, how many people can consume that amount of oil ?*							
I	**Konfeksi / *Confectionaries***							
I1	Gula Pasir / *Granulated sugar*					Sudu teh *Teaspoon*		
I2	Kuih tempatan / *Local kuih*					Keping / *Pieces*		
I3	Biskut / *Biscuits*					Keping / *Pieces*		

I4	Coklat / *Chocolate*					Ketul / *Pieces*		
						Biji / *Pieces*		
I5	Gula-gula / *Sweets*					Biji / *Pieces*		
I6	Susu pekat manis *Condensed milk*					Sudu makan / *Tablepoon*		
I7	Ais batu kacang (ABC) *Ice blended*					Mangkuk / *Bowl*		
J	**Perencah & perasa / *Flavours***							
J1	Garam / *Salt*					Sudu teh (setiap kali masak) *Teaspoon*		
J2	Sambal cili, sambal belacan *Condiment*					Sudu teh *Teaspoon*		
J3	Budu /					Sudu teh / *Teaspoon*		
J4	Kicap cair, kicap pekat *Soy sauce*					Sudu teh *Teaspoon*		
J5	Sos cili & sos tomato *Chilli & tomato sauce*					Sudu teh *Teaspoon*		
J6	Sos tiram *Oyster sauce*					Sudu teh *Teaspoon*		
J7	Kunyit *Turmeric*					Sudu teh *Teaspoon*		
K	**Minuman beralkohol khusus bagi bukan Islam / *Alcoholic drinks for non-muslim***							
K1	Syandi					Tin / *Can*		
K2	Bir / *Beer*					Gelas / *Glass*		
						Tin / *Can*		

						Botol		
K3	Wain / *Wine*					Gelas wain / *Wine glass*		
K4	Spirit					Gelas / *Glass*		
K5	Likeur / *Liquor*					Gelas / *Glass*		

APPENDIX II

APPROVAL LETTER FROM MEDICAL RESEARCH ETHICS COMMITTEE

KUALA LUMPUR DAN PUTRAJAYA
Jalan Cenderasari
50590 KUALA LUMPUR
MALAYSIA

Tel : 03-2268 7333
Fax : 03-2268 7555
Laman Web : jknkl.moh.gov.my

Ruj. Kami : Bil.(11)dlm.JKWPKL/203/4 Bhg. 4
Tarikh : 3 April 2019

Puan Farah Nurdiana Binti Borhan
Jabatan Pemakanan dan Dietatik,
Fakulti Perubatan dan Sains Kesihatan,
Universiti Putra Malaysia,
43400 UPM Serdang,
Selangor Darul Ehsan.

Puan,

MAKLUMBALAS PERMOHONAN KELULUSAN UNTUK MENJALANI PENYELIDIKAN BAGI PROJEK ILMIAH TAHUN AKHIR (PKK 4999) DI KLINIK KESIHATAN IBU DAN ANAK DI WILAYAH PERSEKUTUAN, PUTRAJAYA

TAJUK KAJIAN : FAKTOR HUBUNGAN BERKAITAN STRESS DI KALANGAN WANITA HAMIL YANG BEKERJA DI KLINIK KESIHATAN IBU DAN ANAK

NMRR ID : NMRR-18-3182-44940(IIR)

Dengan hormatnya saya merujuk kepada perkara di atas dan surat puan bertarikh 27 Mac 2019 adalah berkaitan.

2. Sukacita dimaklumkan bahawa pihak kami tiada halangan untuk membenarkan puan menjalankan penyelidikan seperti di atas di Klinik Kesihatan Putrajaya Presint 9, 11 & 18 mulai 08 April 2019 hingga 06 Mei 2019.

3. Untuk makluman, pihak puan dimohon agar mematuhi perkara-perkara berikut semasa menjalankan kajian di fasiliti kesihatan Jabatan Kesihatan Wilayah Persekutuan Kuala Lumpur & Putrajaya:-

3.1 Sebarang bentuk kajian yang dijalankan tidak mengganggu kelancaran perkhidmatan klinik dan tugas hakiki pegawai yang terlibat.

3.2 Bagi sebarang permohonan penyelidikan akan datang, pihak puan diingatkan agar menghantar permohonan penyelidikan kepada JKWPKL&P selewat-lewatnya sebulan sebelum tarikh penyelidikan dijalankan bagi memastikan maklumbalas dapat diberikan dalam tempoh masa yang sepatutnya.

3.3 Perlu mengikuti segala perundangan dan prosedur yang telah ditetapkan oleh Kerajaan Malaysia, Kementerian Kesihatan Malaysia (KKM), Pejabat Kesihatan Daerah (PKD) dan Klinik Kesihatan.

3.4 Membentangkan hasil kajian kepada pihak kami setelah kajian selesai.

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APPENDIX III

INFORMATION SHEET

RISALAH MAKLUMAT PESERTA DAN
BORANG PERSETUJUAN atau KEIZINAN PESERTA
(untuk subjek dewasa dan penyelidikan intervensi)

1. **Tajuk penyelidikan**: Faktor- faktor yang berkaitan dengan tekanan dalam kalangan wanita hamil di Klinik Kesihatan Wilayah Persekutuan.

2. **Nama Institusi and Nama Penyelidik:**

   Farah Nurdiana Binti Borhan Universiti Putra Malaysia

3. **Nama Penaja**:

   Universiti Putra Malaysia

4. **Pengenalan:**

   Anda telah dijemput untuk menyertai penyelidikan ini. Risalah ini menjelaskan hal-hal berkenaan penyelidikan tersebut dengan lebih mendalam dan terperinci. Amat penting anda memahami mengapa penyelidikan ini dilakukan dan apa yang dilakukan dalam penyelidikan ini. Sila ambil masa yang secukupnya untuk membaca dan mempertimbangkan dengan teliti penerangan yang diberi sebelum anda bersetuju untuk menyertai penyelidikan ini. Jika ada sebarang kemusykilan ataupun maklumat lanjut yang anda ingin tahu, anda boleh bertanya dengan mana-mana kakitangan yang terlibat dalam penyelidikan ini. Setelah anda berpuashati bahawa anda memahami penyelidikan ini, dan anda berminat untuk turut serta, anda dikehendaki untuk menandatangani Borang Persetujuan atau Keizinan Peserta, pada muka surat akhir risalah ini.

   Penyertaan anda dalam penyelidikan ini adalah secara sukarela dan tidak berbayar. Anda tidak perlu menyertai penyelidikan ini jika anda tidak mahu. Anda juga mempunyai hak untuk tidak menjawab mana-mana soalan yang anda tidak mahu jawab. Anda juga boleh menarik diri daripada penyelidikan ini pada bila-bila masa sahaja. Jika anda menarik diri, segala maklumat yang telah diperolehi sebelum anda menarik diri tetap akan digunakan dalam penyelidikan ini.

   Penyelidikan ini telah mendapat kelulusan Jawatankuasa Etika dan Penyelidikan Perubatan, Kementerian Kesihatan Malaysia.

5. **Apakah tujuan penyelidikan ini dilakukan?**

   Tujuan penyelidikan ini dilakukan adalah untuk menentukan faktor-faktor yang berkaitan dengan tekanan dalam kalangan wanita hamil yang bekerja. Maklumat yang berkenaan boleh mengkaji hubungan antara faktor sosio-demografi, aktiviti fizikal dan faktor psikososial dengan tekanan dalam kalangan wanita hamil yang bekerja di Klinik Kesihatan Putrajaya. Penyelidikan ini akan berlangsung selama satu tahun yang melibatkan seramai 271 responden. Tempoh pembabitan anda dianggarkan selama 20 minit.

6. Apakah prosedur penyelidikan yang akan saya terima?

Sekiranya anda bersetuju untuk menyertai penyelidikan ini, anda dikehendaki mengisi borang soal selidik yang mengandungi maklumat tentang ciri-ciri sosio-demografi, tahap aktiviti fizikal, faktor psikososial dan tekanan.

7. Apakah yang terjadi sekiranya saya bersetuju untuk menyertai penyelidikan ini?

Anda dikehendaki menjawab set borang soal selidik yang mengandungi maklumat tentang ciri-ciri sosio-demografi, *Pregnancy Physical Activity Questionnaire* (PPAQ) berkenaan dengan aktiviti fizikal, *Multidimensional Scale of Perceived Social Support* (MSPSS) untuk faktor psikososial dan *Perceived Stress Scale* (PSS) untuk tekanan. Dianggarkan masa untuk anda lengkapkan kesemua borang soal selidik ialah selama 20 minit.

Bilakah saya akan menerima produk penyelidikan dan bagaimana cara menyimpannya?

Tiada produk penyelidikan yang akan anda terima

9. Apakah tanggungjawab saya sewaktu menyertai penyelidikan ini?

Amat penting anda menjawab kesemua soalan yang ditanyakan oleh kakitangan penyelidikan dengan jujur dan lengkap. Jika keadaan atau kesihatan anda berubah sepanjang penyelidikan ini, anda mesti memberitahu kakitangan penyelidikan. Adalah amat penting untuk memberitahu dengan segera kepada kakitangan penyelidikan jika berlaku sebarang perubahan pada kesihatan anda sepanjang penyertaan anda dalam penyelidikan ini.

10. Apakah jenis rawatan yang akan saya terima selepas menyertai penyelidikan ini ?

Tiada rawatan yang akan diterima selepas menyertai penyelidikan ini. Walaubagaimanapun, jika anda didapati positif tekanan berdasarkan data yang diperoleh, anda akan dihubungi dan dirujuk kepada pegawai perubatan yang berkenaan bagi menerima rawatan tersebut. Segala kos rawatan adalah dibawah tanggunggjawab sendiri.

11. Apakah risiko dan kesan-kesan sampingan menyertai penyelidikan ini?

Kajian ini hanya membawa risiko yang minima memandangkan anda hanya perlu mengisi borang soal selidik. Anda juga dibenarkan untuk tidak menjawab mana-mana soalan yang membuatkan anda rasa tidak selesa.

12. Apakah manfaatnya saya menyertai kajian ini?

Penyelidikan ini mungkin akan mendatangkan manfaat ataupun langsung tiada memberi apa-apa manfaat kepada anda. Segala maklumat yang diperolehi daripada penyelidikan ini akan dapat membantu dalam pengurangan tekanan dalam kalangan ibu mengandung yang bekerja di Putrajaya.

13. Apakah yang akan terjadi sekiranya saya tercedera semasa menyertai kajian ini?

Jika anda tercedera kerana penyertaan anda dalam penyelidikan ini, anda haruslah menghubungi penyelidik dengan segera. Sekiranya kecederaan fizikal/badan atau penyakit terhasil secara langsung akibat daripada prosedur penyelidikan, penyelidik akan melaporkan kepada pegawai perubatan di klinik kesihatan untuk memberi sebarang rawatan yang diperlukan. Tetapi, pihak penyelidik tidak bertanggungjawab terhadap perbelanjaan perubatan bagi penyakit atau rawatan yang sedang anda ikuti, ataupun sebarang masalah yang timbul sama ada daripada kecuaian anda sendiri atau salah laku yang disengajakan, ataupun kecuaian atau salah laku yang disengajakan sama ada oleh pihak penyelidik, pihak klinik kesihatan, mahupun mana-mana pihak ketiga yang terlibat. Walaubagaimanapun, anda tetap tidak kehilangan mana-mana hak anda di sisi undang-undang untuk mendapatkan pampasan sekalipun anda sudah menandatangani borang ini.

14. Apakah rawatan alternatif lain sekiranya saya tidak menyertai penyelidikan ini?

Sekiranya anda tidak menyertai penyelidikan ini, tiada rawatan alternatif lain akan diberikan. Anda juga tidak perlu menyertai dalam penyelidikan ini bagi menerima rawatan untuk merawat penyakit yang anda hadapi. Selain itu, anda juga boleh teruskan dengan rawatan anda seperti biasa.

15. Siapakah yang membiayai penyelidikan ini?

Penyelidikan ini dibiayai oleh pihak universiti iaitu Universiti Putra Malaysia (UPM).

16. Bolehkah penyelidikan ataupun penyertaan saya ditamatkan lebih awal daripada yang dirancang?

Penyelidik boleh menamatkan penyertaan anda dalam penyelidikan ini pada bila-bila masa.

17. Adakah maklumat perubatan saya akan dirahsiakan ?

Segala maklumat anda yang diperolehi dalam penyelidikan ini akan disimpan secara sulit dan nombor rujukan pada setiap borang soal selidik akan diguna pakai bagi menjaga hak privasi anda. Pegawai penyelidik yang menjalankan kajian ini sahaja yang akan mempunya akses kepada maklumat anda. Sekiranya hasil penyelidikan ini diterbitkan atau dibentangkan kepada orang ramai, identiti anda tidak akan didedahkan tanpa kebenaran anda terlebih dahulu.

18. Siapakah yang perlu saya hubungi sekiranya saya mempunyai sebarang pertanyaan?

Sebarang pertanyaan anda boleh hubungi Cik Farah Nurdiana Binti Borhan, 017-7108649 (atau emel kepada farahnurdiana96@gmail.com) atau Jawatankuasa Etika Penyelidikan Perubatan (MREC), 03-22829082 (atau emel kepada nihsec@nih.gov.my) atau penyelia kajian :

Jawatankuasa Etika & Penyelidikan Perubatan
(Medical Research & Ethics Committee)
KEMENTERIAN KESIHATAN MALAYSIA
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BORANG PERSETUJUAN/ KEIZINAN PESERTA

Tajuk Penyelidikan : Faktor- faktor yang berkaitan dengan tekanan dalam kalangan wanita hamil yang bekerja di Klinik Kesihatan Putrajaya.

Dengan menandatangani di bawah, saya mengesahkan bahawa :

- Saya telah diberi maklumat tentang penyelidikan di atas secara lisan dan bertulis and saya telah membaca dan memahami segala maklumat yang diberikan dalam risalah ini.
- Saya telah diberikan masa yang secukupnya untuk mempertimbangkan penyertaan saya dalam penyelidikan ini dan telah diberi peluang untuk bertanyakan soalan dan semua persoalan saya telah dijawab dengan sempurna dan memuaskan.
- Saya juga faham bahawa penyertaan saya adalah secara sukarela dan pada bila-bila masa saya bebas menarik diri daripada penyelidikan ini tanpa harus memberi sebarang alasan dan ianya sama sekali tidak akan menjejaskan rawatan perubatan saya pada masa akan datang. Saya tidak mengambil bahagian dalam mana-mana penyelidikan lain pada masa ini. Saya juga memahami tentang risiko dan manfaat penyelidikan ini dan saya secara sukarela memberi persetujuan untuk menyertai penyelidikan ini di bawah syarat-syarat yang telah dinyatakan di atas. Saya faham saya harus mematuhi nasihat dan arahan yang berkaitan dengan penyertaan saya dalam penyelidikan ini daripada doktor penyelidikan (penyelidik).
- Saya faham bahawa kakitangan penyelidikan, pemantau dan juruaudit terlatih , pihak penaja atau gabungannya, dan pihak berkuasa kerajaan atau undang-undang, mempunyai akses langsung dan boleh menyemak laporan perubatan saya bagi memastikan penyelidikan ini dijalankan dengan betul dan data direkodkan dengan betul. Segala maklumat dan data peribadi akan dianggap sebagai SULIT.
  Saya akan menerima satu salinan 'Risalah Maklumat Peserta dan Borang Persetujuan atau Keizinan Peserta' yang telah lengkap dengan tarikh dan tandatangan untuk dibawa pulang ke rumah.
- Saya bersetuju/ tidak bersetuju* untuk doktor yang merawat keluarga saya diberitahu tentang penyertaan saya dalam penyelidikan ini. *(*Potong mana yang tidak berkenaan)*

Subjek:
Tandatangan: Nombor K/P:

Nama: Tarikh :

Penyelidik yang mengendalikan proses menandatangani borang keizinan:
Tandatangan: Nombor K/P:

Nama: Tarikh :

Saksi tidak-berpihak/adil: *(Diperlukan; jika subjek adalah buta huruf dan kandungan risalah maklumat peserta disampaikan secara lisan kepada subjek)*
Tandatangan: Nombor K/P:

Nama: Tarikh :