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COMPARISON OF PARENTAL BELIEFS, ATTITUDES AND FEEDING PRACTICES AND CHILDREN'S EATING BEHAVIOURS BETWEEN OVERWEIGHT AND NORMAL WEIGHT PRIMARY SCHOOL CHILDREN IN PUCHONG, SELANGOR

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COMPARISON OF PARENTAL BELIEFS, ATTITUDES AND FEEDING PRACTICES AND CHILDREN'S EATING BEHAVIOURS BETWEEN OVERWEIGHT AND NORMAL WEIGHT PRIMARY SCHOOL CHILDREN AGED 10-11 YEARS IN PUCHONG, SELANGOR

BY

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Abstract

COMPARISON OF PARENTAL BELIEFS, ATTITUDES AND FEEDING PRACTICES AND CHILDREN'S EATING BEHAVIOURS BETWEEN OVERWEIGHT AND NORMAL WEIGHT PRIMARY SCHOOL CHILDREN IN PUCHONG, SELANGOR

Chong Wei Gin

Introduction: Parental feeding practices and poor children's eating behaviours were two of the most dominant factors that lead to malnutrition in children. This cross-sectional comparative study aimed to compare parental beliefs, attitudes and feeding practices and children's eating behaviours between overweight (OW) and normal weight (NW) primary school children aged 10-11 years in Puchong, Selangor. **Method:** Four National Primary Schools in Puchong were randomly selected. During Phase I of the study, a total of 384 Standard four and five children were measured on their body weight status. Based on their body weight status, 100 overweight and obese (OW) children were matched with 100 normal weight (NW) children by sex, age and ethnicity. Their parents were recruited as study subjects for Phase II of this study. The average age of children (n=200) was 11.13±0.52 years which comprised 188 (94.0%) Malay, 4 (2.0%) Chinese and 8 (4.0%) Indian respectively. Child Feeding Questionnaire (CFQ) and Children's Eating Behaviours Questionnaire (CEBQ) were brought back by the children to be completed by their parents. CFQ was used to assess parental beliefs, attitudes and feeding practices while CEBQ was used to assess children's eating styles. **Results:** From Phase I finding, the prevalence of childhood overweight and obesity (35.6%) were three times higher than thinness (11.7%). From Phase II findings, OW children were more likely to have overweight or obese mother compare to their NW counterparts (OW: 27.78±5.52kgm^{-2}; NW: 24.38±3.58kgm^{-2}, t=4.388, p<0.05). Parents of OW children were able to perceive their child as overweight (OW: 3.03±0.43; NW: 2.86±0.38, t=3.052, p<0.05) and less pressured their child to eat (OW: 3.62±0.74; NW: 3.99±0.84, t=-3.310, p<0.05). OW children had significantly higher food enjoyment (OW: 3.59 ± 0.78; NW: 3.22 ± 0.66, t=3.641, p<0.05), higher respond to food (OW: 2.42 ± 0.94; NW: 2.09 ± 0.69, t=2.821, p<0.05), and eat more when emotionally affected (OW: 2.08 ± 0.82; NW: 1.85 ± 0.72, t=2.158, p<0.05) compared to NW children. Meanwhile, OW children hardly reached satiety level (OW: 2.36 ± 0.52; NW: 2.76 ± 0.59, t=-4.966, p<0.05) and less picky in food (OW: 2.46 ± 0.55; NW: 2.67 ± 0.54, t= -2.795, p<0.05) compared to NW children. **Conclusion:** The prevalence of overweight and obesity was high among primary school children in Puchong, Selangor. Maternal BMI, pereceived child weight, pressure to eat, food enjoyment, food responsiveness, emotionally over-eating, satiety responsiveness and food fussiness were different in OW children compared to NW children. Therefore, training programs for parents on understanding their children's eating behaviours and ways to feed their children are imperative to overcome childhood obesity.

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Abstrak

PERBANDINGAN KEPERCAYAAN, SIKAP DAN AMALAN PEMBERIAN MAKAN IBUBAPA DAN TABIAT PEMAKANAN KANAK-KANAK DI ANTARA KANAK-KANAK SEKOLAH RENDAH BERUMUR 10-11 TAHUN YANG BERAT BADAN BERLEBIHAN/OBES DAN NORMAL DI PUCHONG, SELANGOR

Chong Wei Gin

Pengenalan: Amalan pemberian makanan ibubapa dan tabiat makan anak merupakan dua faktor dominan yang membawa kepada kekurangan atau kelebihan zat makanan dalam kalangan kanak-kanak. Kajian ini bertujuan untuk membandingkan kepercayaan ibu bapa, sikap dan amalan pemakanan dan tabiat makan kanak-kanak di antara kanak-kanak berlebihan berat badan (OW) dan kanak-kanak berat badan normal (NW) dalam kalangan kanak-kanak sekolah rendah berumur 10-11 tahun di Puchong, Selangor. **Kaedah:** Empat Sekolah Rendah Kebangsaan di Puchong telah dipilih secara rawak. Dalam Fasa I, sebanyak 384 kanak-kanak darjah empat dan lima diukur dari segi berat badan dan ketinggian. Berdasarkan status berat badan mereka, 100 kanak-kanak berlebihan berat badan dan obes (OW) telah dipadankan dengan 100 kanak-kanak berat badan normal (NW) berdasarkan jantina , umur dan etnik. Ibubapa mereka telah diambil sebagai subjek bagi Fasa II dalam kajian ini. Purata umur kanak-kanak (n = 200) ialah 11.13 ± 0.52 tahun yang terdiri 188 (94.0%) Melayu, 4 (2.0%) Cina dan 8 (4.0%) India. Child Feeding Questionnaire (CFQ) dan Children's Eating Behaviours Questionnaire (CEBQ) dibawa balik oleh kanak-kanak untuk diisi oleh ibu bapa mereka. CFQ digunakan untuk menilai kepercayaan ibu bapa, sikap dan amalan pemberian makanan manakala CEBQ digunakan untuk menilai cara pemakanan kanak-kanak. **Hasil:** Daripada Fasa I, prevalens zaman kanak-kanak berlebihan berat badan dan obesiti (35.6%) adalah tiga kali lebih tinggi daripada kekurangan berat badan (11.7%). Daripada Fasa II, kanak-kanak OW lebih cenderung untuk mempunyai ibu berat badan berlebihan atau obes berbanding dengan kanak-kanak NW (OW: 27.78 ± 5.52kgm -2; NW: 24.38 ± 3.58kgm^{-2}, t= 4.388, p < 0.05). Ibu bapa kanak-kanak OW dapat mengenal pasti anak mereka sebagai berat badan berlebihan (OW: 3.03 ± 0.43; NW: 2.86 ± 0.38 , t= 3,052 , p < 0.05) dan kurang tekanan kepada mereka untuk makan (OW: 3.62 ± 0.74 ; NW: 3.99 ± 0.84 , t= -3,310 , p< 0.05). Kanak-kanak OW mempunyai keseronokan makanan yang lebih tinggi (OW: 3.59 ± 0.78; NW: 3.22 ± 0.66, t= 3,641, p< 0.05), bertindak balas terhadap makanan (OW: 2.42 ± 0.94; NW: 2.09 ± 0.69, t= 2,821, p< 0.05), dan makan lebih apabila emosi terjejas (OW: 2.08 ± 0.82; NW: 1.85 ± 0.72 , t= 2,158, p < 0.05) berbanding dengan kanak-kanak NW. Sementara itu , kanak-kanak OW susah mencapai tahap kenyang (OW: 2.36 ± 0.52; NW: 2.76 ± 0.59 , t= -4,966, p< 0.05) dan kurang cerewet dalam makanan (OW: 2.46 ± 0.55; NW: 2.67 ± 0.54 , t= -2,795, p < 0.05) berbanding dengan kanak-kanak NW. **Kesimpulan:** kelaziman berat badan berlebihan dan obesiti adalah tinggi daripada dalam kalangan kanak-kanak sekolah rendah di Puchong, Selangor. Berat badan ibu, tanggapan berat kanak-kanak, tekanan untuk makan, kenikmatan makanan, responsif

makanan, berlebihan makan semasa emosi, kenyang responsif dan kecerewetan makanan adalah berbeza pada kanak-kanak OW berbanding dengan kanak-kanak NW. Oleh itu , program latihan untuk ibu bapa mengenai memahami tingkah laku makan dan cara-cara untuk memberi makan kepada anak mereka adalah penting untuk mengatasi masalah kanak-kanak obesiti.

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CHAPTER 1

INTRODUCTION

1.1 Background

Obesity is defined as abnormal or excessive fat accumulation in the body that may impair health (WHO, 2013). Body mass index (BMI) is a simple index that is commonly used to determine overweight and obesity of an individual. BMI measures the relative weight based on an individual's mass and height, but it cannot measure the degree of fatness in an individual (WHO, 2013). According to the WHO, the global prevalence of overweight and obesity have nearly doubled since 1980. WHO revealed that overweight and obesity are the sixth leading risk for global deaths (WHO, 2014). Over-nutrition is linked to more deaths than underweight. At least 2.6 million people each year die as a result of being overweight or obese (WHO, 2014). In addition, 44.0% of the diabetes burden, 23.0% of the ischaemic heart disease burden and between 7.0% and 41.0% of certain cancer burdens are attributable to overweight and obesity.

Global epidemic of children overweight and obesity is also one of the major public health concerns in children. Worldwide prevalence of childhood overweight and obesity had increased from 4.2% in 1990 to 6.7% in 2010 (de Onis, Blössner, & Borghi, 2010). In 2010, 43 million children (35 million in developing countries) were estimated to be overweight and obese; 92 million were at risk of overweight and this

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trend is expected to reach 60 million in 2020 (de Onis et al., 2010). Childhood overweight and obesity were once considered as high-income or developed country problem, but now there are increased reports in middle-income and low-income countries. In short, childhood overweight and obesity occurred in all parts of the world.

For Western countries, the prevalence of overweight and obesity in children was estimated from 17.0% to 25.0% in West-Europe, Australia, and the United States (Jackson & Lobstein, 2006; Odgen et al., 2006; Olds, Tomkinson, Ferrar, & Maher, 2010). This problem had affected both developed and developing countries. According to the Centers for Disease Control and Prevention (CDC), nearly one in five children (16.8%) in United States aged 2 to 19 years were obese, a rate that has tripled since 1980 (Centers for Disease Control and Prevention, 2012). Similar scenario had occurred in Japan where the prevalence had risen from 6.1% in 1976 to 10.2% in 2000 (Matsushita, Yoshiike, Kaneda, Yoshita, & Takimoto, 2004). For developing countries, the estimated prevalence of childhood overweight and obesity in Africa in 2010 was 8.5% and is expected to reach 12.7% in 2020 (de Onis et al., 2010). Besides that, the prevalence of childhood overweight and obesity increased in Brazil,from 13.9% in 1997 to 22.1% in 2012; and as for India, it has increased from 9.8 in 2006 to 22.0% in 2012 (Gupta, Goel, Shah, & Misra, 2012).

Childhood obesity was also one of the major health problems among children in Malaysia nowadays. According to Mohd Ismail et al. (2009), the prevalence of overweight and obesity among primary school children in Peninsular of Malaysia had increased from 20.7% in 2002 to 26.5% in 2008. In other word, about one in four Malaysian children was overweight or obese. The Third National Health and

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Morbidity Survey 2006 [NMHS III] (Institute for Public Health, 2008) reported the prevalence of obesity (based on the CDC 2000 reference-weight for age) among children below 18 years old was 5.4%. Recent results from National Health and Morbidity Survey 2011 reported a higher prevalence of obesity among children below 18 years old which was 6.1%. Childhood overweight and obesity in Malaysia is considered as a serious problem that should be treated promptly.

While the prevalence of overweight and obesity is high, it is often associated with series of chronic diseases such as Type 1 and 2 diabetes mellitus, hypertension, dyslipidaemia, cardiovascular diseases, obstructive sleep apnea (OSA) and many cancers (including colorectal cancer, kidney cancer and oesophageal cancer) (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006; WHO, 2013). Children with higher BMI are more likely to develop these diseases at younger age compare to children with lower BMI (Patrick & Nicklas, 2005; Wiseman, 2008). There are also some psychological effects whereby obese children are more prone to low self-esteem, negative body image and depression. However, overweight and obesity, as well as their related diseases are largely preventable. Therefore, prevention programs on childhood obesity need high priority.

1.2 Problem Statement

Childhood obesity affected 43 million children and around 92 million children were at risk of overweight globally in 2010 (de Onis et al., 2010). This problem had caused some economic consequences, especially in increasing medical cost burden in some of the countries. In 2008, obesity cost the United States around $147 billion in direct and indirect costs (Finkelstein, Trogdon, Cohen, & Dietz, 2009). The grant awarded by USDA's National Institute of Food and Agriculture

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(NIFA) in universities to develop childhood obesity prevention programs was around 5 million US dollar (Martin, 2014). Therefore, the whole nation expects more effective, useful and on-going childhood obesity prevention programs from the universities.

Apart from that, a lot of intervention programs were conducted to manage childhood obesity (Wang et al., 2013). The intervention programs comprise two important frameworks, family-based intervention and school-based intervention. For example, the 2003 Children's Lifestyle and School-Performance Study (CLASS) was a large study of 5th-grade students, their parents, and their school principals in Nova Scotia, Canada (Veugelers, & Fitzgerald, 2005). However, the response rate and effectiveness of the program was at moderate level (51.1%) due to low consent and participation from parents (Veugelers, & Fitzgerald, 2005). From a different perspective, many studies revealed that family-based intervention in improving the lifestyle and eating behaviours of the children were more effective than school-based intervention in treating childhood overweight and obesity (Oude Luttikhuis et al., 2009). Parents play an important role in feeding children at early childhood age. They have strong influence on a child's eating and physical activity patterns throughout their life. The feeding practices of the parents will affect their children's body weight and predict their eating behaviours in later life (Scaglioni, Salvioni & Galimberti, 2008; Webber, Hill, Saxton, Van Jaarsveld, & Wardle, 2009). Parental feeding practices pinpoints modifiable risk factor for childhood overweight and obesity as it is closely associated with children's eating behaviours (Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001; Faith et al., 2004; Scaglioni et al., 2008).

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On the other hand, children were often become the targets for researchers as they were more vulnerable to malnutrition and infectious diseases (WHO, 2013). They are at developmental stage where their gross motor skills begin to occur (Brown et al., 2008). Their food preference and eating behaviours will also slowly develop and shape during childhood (Brown et al., 2008). Therefore it is very important to monitor their children's eating behaviours during meal time. This is because different eating styles of the children are eventually linked with their body weight status (Carnell & Wardle, 2007). Physiological cues among children such as hunger and satiation during feeding had been identified as important factors on obesity prevention (Disantis, Hodges, Johnson, & Fisher, 2011). For example, if a child able to control his desire to eat when he is full, then he will has lower risk of becoming overweight or obesity in later life (Disantis et al., 2011). Although studies showed that eating behaviours of the children was positively correlated with their BMI (Gregory, Paxton, & Brozovic, 2010), this relationship has yet to be examined among primary school children in local context.

Inconsistent results were found in comparing parental feeding practices according to children's body weight status in Malaysia (Abdul Manan, Norazawati, & Lee, 2012; Noor Azimah et al., 2012; Tung et al., 2011). Noor Azimah et al. (2012) aimed to determine the association between child weight status and parental concerns about child weight and parental control in child feeding in Kuala Lumpur while Tung et al. (2011) aimed to determine the associations between familial and socio-environmental factors with childhood obesity in Selangor and Kuala Lumpur. Both studies reported that parental concern about child's weight and parental restriction on food were significantly differed between overweight and normal weight children.

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Parents of overweight children were more concerned about their children's weight and more likely to restrict them from unhealthy food such as sweets and snacks.

However, a contradict result was found in study by Abdul Manan et al. (2012), which aimed to compare the parental beliefs, attitudes and feeding practices between overweight and normal weight children in Kota Bharu, Kelantan. They reported that parents for both overweight and normal weight children had similar concerns on their child's weight and both group of parent restricted on their child's food intake. The inconsistencies might be due to the different study design, objective, study location and study samples. Hence, this study aims to compare the parental beliefs, attitudes, feeding practices and children's eating behaviours between overweight and normal weight primary school children in Puchong, Selangor. In doing so, important research questions to be answered in this study, include:

1. What is the prevalence of overweight and obesity in primary school children?
2. Are there any differences in parental beliefs, attitudes, and feeding practices between overweight and normal weight primary school children among study samples?
3. Are there any differences in children's eating behaviours between overweight and normal weight primary school children?

1.3 Significance of the study

This study was conducted to compare the parental beliefs, attitudes, feeding practices and children's eating behaviours between overweight and normal weight primary school children in Puchong Selangor. Various studies had documented parental feeding practices and children's eating behaviours were the crucial risk factors for malnutrition in children (Disantis et al., 2011; Gregory et al., 2010;

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Scaglioni et al., 2008). While statistics available indicates a high prevalence of childhood overweight and obesity (33.9%) in Selangor and Kuala Lumpur (Tung et al., 2011). Thus, this study can provide useful information on the nutritional status of the children in Puchong, Selangor after determining the body weight status of children.

Findings on comparison of parental beliefs, attitudes, feeding practices and children's eating behaviours between overweight and normal weight children from this study can be used as part of the nutritional education material for individual, school and community. By comparing the parental beliefs, attitudes and feeding practices between overweight and normal weight children, researcher from the study can determine the feeding practices that linked more to childhood obesity. The findings can be included in mass media such as advertisement, daily newspaper, magazines, journal, internet and pamphlets. The information can guide the parents or caregivers on how they should feed their child. For example, they should monitor the types and quantity of food taken by their children and be responsible in feeding their children with balanced meal. Hence, this could help in educating and correcting the parents' perceptions towards their children's body weight status, and the appropriate way of feeding their children.

By comparing the children's eating beaviours between overweight and normal weight children, researcher from the study can determine the eating behaviours which are more related with childhood obesity. The findings can be incorporate into school syllabus, mass media such as advertisement, daily newspaper, magazines, journal, internet and pamphlets as well. This could guide the parents on how to determine whether their children are at risk of being overweight or not from

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children's eating behaviours. For example, if their children tend to eat more when they are emotionally affected indicates there is a higher risk for them to develop into overweight later.

In addition, program planners from government or non-government organizations can use the findings from the study in targeting healthy feeding practices for health promotion interventions. The findings of this study will inform the clinicians about the importance role of parents in term of feeding practices and role of children in term of their eating behaviours in overcome childhood overweight and obesity problem. These would help in better understanding on the needs to include both parents and children including family food environment in the next obesity intervention programs.

Last but not least, this study can provide baseline information for future research. The results found in this study can be used as references in advancing research on comparison of parental beliefs, attitudes, feeding practices and children's eating behaviours between overweight and normal weight primary school children in Puchong, Selangor.

1.4 Objective

1.4.1 General Objective

To compare the parental beliefs, attitudes and feeding practices and children's eating behaviours between overweight and normal weight children aged 10-11 years in Puchong, Selangor.

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1.4.2 Specific Objectives

Phase I of the study (health screening)

1. To determine children's socio-demographic characteristics (sex, age and ethnicity).
2. To determine the prevalence of overweight and obesity in selected primary schools located at Puchong, Selangor.

Phase II of the study (Comparison of parents' BMI, beliefs, attitudes, feeding practices and children's eating behaviours between overweight & normal weight children)

1. To determine the differences in BMI of fathers between overweight and normal weight children.
2. To determine the differences in BMI of mothers between overweight and normal weight children.
3. To determine the differences in parental beliefs, attitudes and feeding practices between overweight and normal weight children.
4. To determine the differences in children's eating behaviours between overweight and normal weight children.

1.5 Null hypothesis

1. There are no significant differences in BMI of fathers between overweight and normal weight children.
2. There are no significant differences in BMI of mothers between overweight and normal weight children.
3. There are no significant differences in parental beliefs, attitudes and feeding practices between overweight and normal weight children.
4. There are no significant differences in children's eating behaviours between overweight and normal weight children.

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1.6 Conceptual Framework

Childhood obesity can be caused by multifactors which include dietary pattern, physical activity, personal eating behaviours, genetics, parents' BMI and parental feeding practices. Four independent variables in this study were socio-demographic characteristics (sex, ethnicity, marital status, educational level of parents, parental monthly income and occupation of parents), parental BMI, parental beliefs, attitudes and feeding practices (perceived child weight, concern about child weight, perceived responsibility, monitoring, restriction and pressure to eat) and children's eating behaviours (enjoyment of food, food responsiveness, emotional over-eating, desire to drink, satiety responsiveness, slowness in eating and emotional under-eating). Dependent variable in this study was children's body weight status which divided into overweight or obese (OW) and normal weight (NW) children. Studies showed that parental influences including parents' BMI (Dieu et al., 2007; Johannsen, Johannsen, & Specker, 2006; McDonald et al., 2009) and parental beliefs, attitudes and feeding practices (Noor Azimah et al., 2008; Tung et al., 2008; Viana, Sinde, & Saxton, 2008) were the dominant factors that might put a child at risk of being malnutrition. Besides that, children's eating behaviours such as food fussiness was positively associated with children's body weight status (Jansen et al., 2012; Sleddens et al., 2008; Viana et al., 2008; Webber, Hill, Saxton, Van Jaarsveld, & Wardle, 2009).

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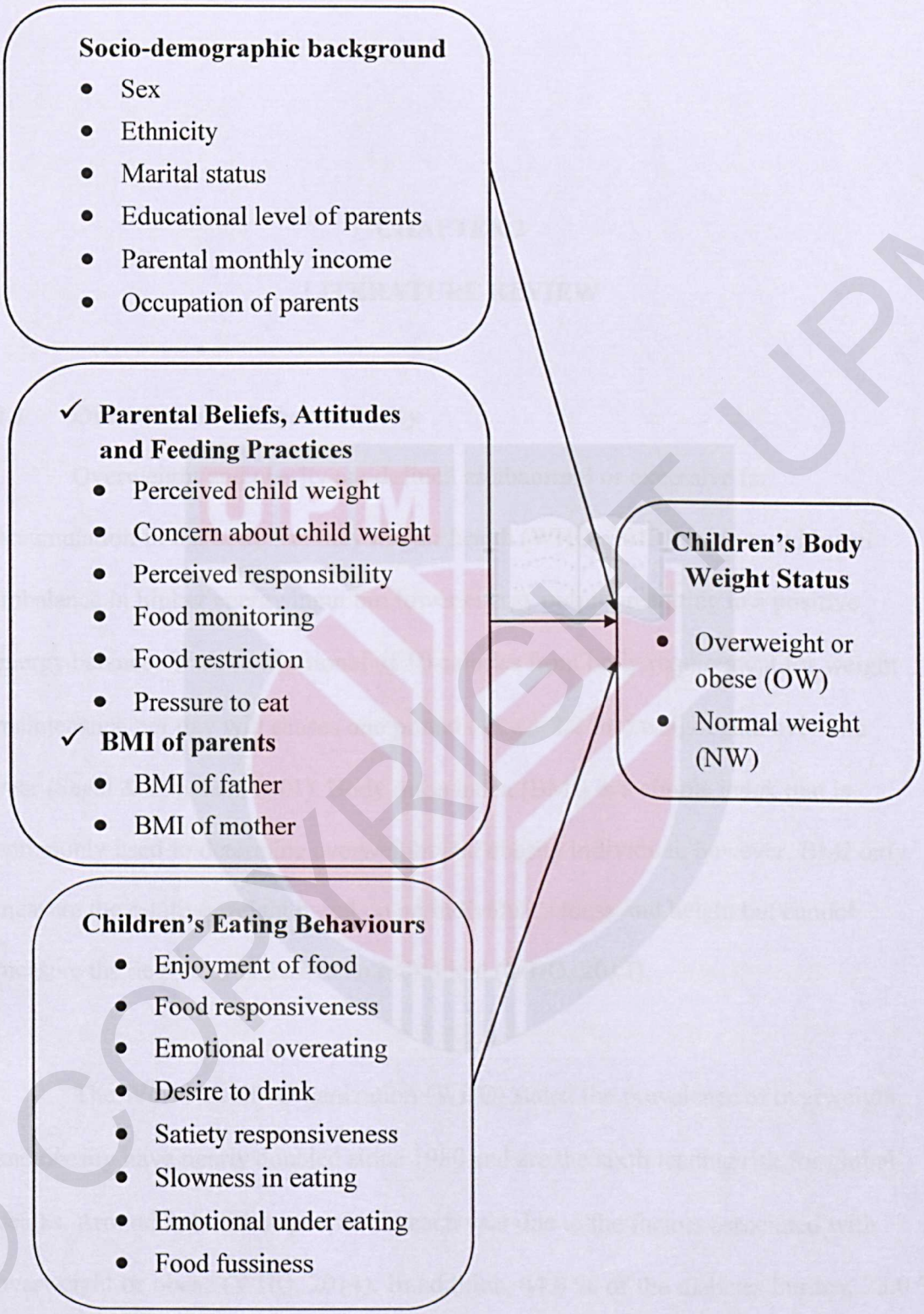

Figure 1.1: Comparison of socio-demographic characteristics, parental beliefs, attitudes, feeding practices, body weight status of parents and children's eating behaviours with children's body weight status.

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CHAPTER 2

LITERATURE REVIEW

2.1 Overview of childhood obesity

Overweight and obesity are defined as abnormal or excessive fat accumulation in the body that may impair health (WHO, 2013). It is caused by an imbalance in higher energy input but lower energy output, resulting in a positive energy balance. With an additional of 10 calories from body requirement for weight maintenance per day will causes one pound (1Kg = 2.2 lbs) weight gain over one year (Segal & Sanchez, 2001). Body mass index (BMI) is a simple index that is commonly used to determine overweight and obesity individual, however, BMI only measure the relative weight based on an individual's mass and height but cannot measure the degree of fatness in an individual (WHO, 2013).

The World Health Organization (WHO) stated the prevalence of overweight and obesity have nearly doubled since 1980 and are the sixth leading risk for global deaths. Around 3.4 million people die each year due to the factors associated with overweight or obese (WHO, 2014). In addition, 44.0 % of the diabetes burden, 23.0 % of the ischaemic heart disease burden and between 7.0 % and 41.0 % of certain cancer burdens are attributable to overweight and obesity.

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Global epidemic of children overweight and obesity is also one of the major public health concerns in children. Worldwide prevalence of childhood overweight and obesity had increased from 4.2% in 1990 to 6.7% in 2010 (de Onis et al., 2010). In 2010, 43 million children (35 million in developing countries) were estimated to be overweight and obese; 92 million were at risk of overweight and this trend is expected to reach 60 million in 2020 (de Onis et al., 2010). Childhood overweight and obesity were once considered as high-income or developed country problem, but now seen in middle-income and low-income countries.

For Western countries, the prevalence of overweight and obesity in children was estimated from 17.0% to 25.0% in West-Europe, Australia, and the United States (Jackson & Lobstein, 2006; Odgen et al., 2006; Olds, Tomkinson, Ferrar, & Maher, 2010). Ogden and Carroll (2010) reported that the prevalence of childhood obesity increased in the 1980s and 1990s but there were no significant changes in prevalence between 1999-2000 and 2007-2008 in the United States. Results from National Health and Nutrition Examination Survey (NHANES) in 2007-2008 were found to be similar with a study done by Ogden and Carroll (2010), estimated that 16.8% of children aged 2 to 19 years old was overweight and obese.

While in Japan, the prevalence of obese boys and girls between 6 to 14 years old increased from 6.1% and 7.1%, respectively, in the time-period 1976 to 1980, to 11.1% and 10.2% in 1996 to 2000 and the increasing trend was most evident in 9 to 11 years old school children (Matsushita, Yoshiike, Kaneda, Yoshita, & Takimoto, 2004). Inversely, underweight was less prevalent than overweight, an estimated 3% to 8% of children in developed countries were underweight (Boddy, Hackett, & Stratton, 2009; Sjoberg, Lissner, Albertsson-Wikland, & Marild, 2008). This

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problem should gain notable attention because overweight and obesity are linked to more deaths worldwide than underweight (WHO, 2014).

The prevalence of childhood obesity increased substantially not only in developed countries, but it's also growing in many developing countries (Kain et al., 2005). The estimated prevalence of childhood overweight and obesity in Africa in 2010 was 8.5% and is expected to reach 12.7% in 2020 (de Onis, Blössner, & Borghi, 2010). Besides that, increasing prevalence rates reported in Brazil from 13.9% (1997) to 22.1% (2012); and in India from 9.8% (2006) to 22.0% (2012) (Gupta, Goel, Shah, & Misra, 2012).

Childhood overweight and obesity was no longer an issue that occurred in other countries but occurred in Malaysia as well. The Third National Health and Morbidity Survey 2006 [NMHS III] (Institute for Public Health, 2008) reported the prevalence of obesity (based on the CDC 2000 reference-weight for age) among children below 18 years old was 5.4% and recent results from National Health and Morbidity Survey 2011 reported a higher prevalence of obesity among children below 18 years old which was 6.1%. According to Mohd Ismail et al. (2009), a study conducted in Peninsular Malaysia reported that prevalence of overweight and obesity among primary school children aged 9-11 years in Peninsular of Malaysia (based on the WHO 2007 reference) had increased from 20.7% in 2002 to 26.5% in 2008. While in 2011, Tung, Shamarina, and Mohd Nasir (2011) reported that the prevalence of overweight and obesity (based on WHO Growth Reference 2007) was 33.9% among 9-12 years old primary school children in Kuala Lumpur and Selangor. These data clearly show increasing trends in childhood overweight and obesity prevalence and severity of childhood obesity in Malaysia.

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Childhood obesity is associated with a higher chance of premature death and disability in adulthood. Moreover, overweight and obese children are more likely to stay obese into adulthood (Dehghan, Akhtar-Danesh & Merchant, 2005; Hisae et. Al., 2003; Turner et. Al., 2004; WHO, 2014). Poor diet in childhood often predicts poor diet in adulthood (Craigie, Lake, Kelly, Adamson, & Mathers, 2011). A 12-year follow-up cohort study in Japan recruited 1047 children treated for obesity at Mie National Hospital in Japan between 1976 and 1992 with the mean age of 10.6 years. They followed the children for 12 years from childhood until adulthood. Results showed that the prevalence of childhood obesity developed into adulthood obesity or overweight was 54.7% (Togashi, Masuda, Rankinen, Tanaka, Bouchard, & Kamiya, 2002). Severely obese children (36.7%) were more likely to become obese adults even though they received obesity treatment during childhood.

Another cohort study of 8498 children aged 7-15 years in 1985 at Australia, height and weight were measured in 1985, and self-reported during follow-up. The accuracy of self-reported data was checked in 1185 participants. This study found that the relative risk (RR) of becoming an obese adult was significantly greater for those who had been obese as children compared with those who had been a healthy weight (RR = 4.7; 95% CI, 3.0-7.2 for boys and RR = 9.2; 95% CI, 6.9-12.3 for girls). The proportion of adult obesity attributable to childhood obesity was 6.4% in males and 12.6% in females (Venn, Thomson, Schmidt, Cleland, Curry, Gennat, & Dwyer, 2007). By that, a conclusion can be made where obesity in childhood may be a strong predictive of obesity in early adulthood.

Weight problems among children should be taken seriously as overweight and obesity is often associated with chronic health problems including Type 1 and 2

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diabetes mellitus, hypertension, dyslipidaemia, cardiovascular diseases, depression, obstructive sleep apnea (OSA) and many cancers (including colorectal cancer, kidney cancer and oesophageal cancer) (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006; Nicklas & Hayes, 2008; Patrick & Nicklas, 2005; Wiseman, 2008). These diseases refer to as non-communicable diseases (NCDs) which will lead to premature mortality and also long-term morbidity in later life (WHO, 2013). The consequences should gain notable concern from public because overweight or obese children are more likely to develop these diseases at early adulthood compare to normal weight children (WHO, 2014). In addition, overweight and obesity in children are associated with significant reductions in quality of life (Tsiros et. al., 2009). However, overweight and obesity, as well as their related diseases are largely preventable. Hence, researches must continuously study the factors associated with childhood obesity in order to implement effective programs to improve nutritional status of children.

2.2 Risk factors of childhood obesity

Childhood obesity is thought to result from several factors, including personal behaviours factors such as increased screen time, less physical activity, higher consumption of sugary drinks and energy-dense foods, and an increase in eating out, parental influences such as feeding practices, peer influences, dietary intakes, genetics, and environmental factors such as media and food availability (Anderson & Butcher, 2006; Bray, 2007; Koletzko et al., 2002; Nguyen & El-Serag, 2010). Understanding the risk factors associated with undesirable weight gain in children is important to reverse current obesity trends.

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Studies have reported that genetics play a very important role in determining children's body weight (Koletzko et al., 2002; Llewellyn, Trzaskowski, Plomin, & Wardle, 2013). At present, a few genetic variants have been discovered, and these explain a very small amount of individual differences in body weight (around 2.0%), there are hundreds of other genetic variants influencing body weight that are yet to be discovered (Llewellyn et al., 2013). Children who have overweight or obese first-degree relatives will have a higher risk of developed into obesity (Nguyen & El-Serag, 2010). In other word, a child is more likely to become obese if there is a presence of family history of obesity. If both parents are obese, two-thirds of their children will be obese, whereas if neither parent is obese, only 9.0% of their children will be obese (Nguyen & El-Serag, 2010).

Next, recognizing the adoption of industrialised western society lifestyles are also contributing to childhood obesity. Shifting towards 'westernized' meal patterns had brought a new scenario in many developing countries. In Malaysia, rapid economic changes had brought significant changes in community lifestyles including changes in dietary patterns. For example, an increase in consumption of fast food and soft drinks may result in positive energy imbalance where calories consumed are higher than calories expended. An excessive fat intake will lead to fat accumulation in body and weight gain in children (Anderson & Butcher, 2006).

Duration of television viewing also associated with children body weight (Anderson & Butcher, 2006). Children who spend more time watching television have a higher BMI and a higher percent of body fat because they are less physically active. For instant, they tend to consume snacks when watching television. An increase in total energy intake combined with decreased energy expenditure

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contributes to weight gain (Janssen et al., 2005; Eisenmann, Bartee, Smith, Welk, & Fu, 2008).

2.3 Socio-demographic characteristics and body weight status

Children's socio-demographic characteristics such as sex, age and ethnicity were studied to determine its association with their body weight status.

2.3.1 Sex

Studies had been conducted to determine the association between sex and children's body weight status. However, inconsistent findings were found from previous studies. Previous literature showed that the prevalence of overweight and obesity among boys were higher than girls although the differences were not significant (Abdul Manan et al., 2012; Dieu, Dibley, Sibbritt, & Hanh, 2007; Kasmini et al., 1997). According to Dieu, Dibley, Sibbritt, and Hanh (2007), boys were 1.91 times more likely to be obese than girls in Ho Chi Minh City, Vietnam. While in Malaysia, few studies had reported similar results where prevalence of overweight and obesity among boys were higher than girls (Abdul Manan et al., 2012; Ghazali, Kamaluddin, Said, Isa, Ghazali, & Idris, 2006; Kasmini et al., 1997; Noor Azimah et al., 2008; Tung, Shamarina, & Mohd Nasir, 2011) even though the differences were not significant. However, some studies showed significant differences in body weight status between boys and girls. A study in Selangor found significant difference in BMI between boys and girls ($t = 2.31$, $p < 0.001$) and the boys were heavier than the girls (Zaini, Lim, Low, & Harun, 2005). These results concluded that girl is more protective from their parents of becoming overweight compare to boys (Institute of Public Health, 2006; Khor et al., 2011). Hence, sex

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variance in independent predictors for obesity is crucial for program planners to determine specific targets for intervention.

2.3.2 Age

Studies yielded consistent results on the association between children's age and children's body weight status. A study of Júlíusson, Eide, Roelants, Waaler, Hauspie, and Bjerknes (2010) among 6386 children aged 2-19 years was aimed to determine the prevalence of childhood overweight and obesity and to determine socio-demographic risk factors in Norwegian children. Júlíusson et al. (2010) found that age was significantly correlated to the children's body weight status. The prevalence was higher in primary school children aged 6-11 years (17.0%) but lower in younger children aged 2-5 years (12.7%) and also adolescent aged 12-19 years (11.7%) in Norway.

Amin, Al-Sultan, and Ali (2008) also reported the similar trend where overweight and obese children were more prevalent among children age ranged from 10 to 14 years old in Al-Hassan, Kingdom of Saudi Arabia. In addition, the prevalence of childhood overweight and obesity was higher for the 12 year old group (12.2%) compare with 16 year old group (3.3%) (Amin et al., 2008). Another study by Kasmini, Idris, Fatimah, Hanafiah, Iran, and Asmah Bee (1997) among 6239 school children aged between 7 to 16 years in Kuala Lumpur found that prevalence of obesity and overweight were 3.5% and 6.0% respectively. These findings can be explained by the pubertal period between 10 to 14 years old, where there is an associated increase in adipose tissue as well as in overall body weight among children during this period (Kasmini et al., 1997).

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2.3.3 Ethnicity

Previous studies found that ethnicity was significantly associated with childhood obesity (Kasmini et al., 1997; Zaini et al., 2005). The prevalence of childhood obesity was varying among Malay, Chinese and Indian in Malaysia (Ghazali et al., 2006). A study by Kasmini et al. (1997) among 6239 school children aged between 7 to 16 years in Kuala Lumpur reported there were significant differences in overweight prevalence but not obesity prevalence between ethnic groups (Malays, Chinese and Indian). Highest prevalence of overweight children were found among the Indians (8.2%) followed by the Chinese (6.5%) and Malays (5.3%) in the study. The prevalence of childhood obesity among three ethnic groups was equally prevalent, Malays (3.6%), Chinese (3.4%) and Indian (3.8%) respectively (Kasmini et al., 1997).

Another cross-sectional study by Zaini, Lim, Low, & Harun (2005) was carried out in Selangor involving 1405 primary school children aged 9-10 years. The findings found that Chinese (23.0%) children lead the prevalence of overweight, followed by Indians (16.0%) and Malays (14.8%). In other words, about one out of four Chinese children was overweight. The prevalence of obesity on the other hand was in the reverse order. Malay (7.6%), followed by Indian (5.1 %) and Chinese (1.6%) children (Zaini et al., 2005).

The differences in the prevalence of childhood overweight and obesity could be due to cultural practice differences that affect the eating pattern between each ethnic group. Chinese consumed more carbohydrate food compared with other ethnic groups and this lead to overweight but yet to reach obese level (Kasmini et al., 1997). Prevalence of obesity among Malays children was the highest among three ethnic

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groups (Zaini et al., 2005). This is because Malays were more likely to consume high fat food such as nasi lemak, karipap and doughnut in their usual meals which may lead to high prevalence of obesity.

2.3.4 Educational level of parents

Studies had been conducted to determine the association between occupation of parents and children's body weight status. However, inconsistent findings were found from previous studies. These could be due to the different in study location, sample size, study subjects and duration of the study. A one year follow-up study done by Dieu et al. (2007) among 670 preschool children in Ho Chi Minh City, Vietnam aimed to determine the relationship between children's body weight status and socio-demographic factors. The findings reported that paternal education level was significantly associated with overweight and obesity in children. Fathers who had lower educational level were more likely to have overweight or obese children.

A cross-sectional study by Amin et al. (2008) among 1139 male primary school children aged 10-14 years in Al-Hassan, a Kingdom of Saudi Arabi was conducted. Amin et al. (2008) found that prevalence of overweight and obesity in children was higher among mothers who had lower educational level compared to mothers who had higher educational level. This result was similar with another study by Júlíusson et al. (2010) among 6386 Norweigian children aged 2-19 years. Júlíusson et al. (2010) reported that lower level parental education increased the risk of overweight and obesity in Norwegian children aged 6 to 11 years.

In Malaysia, a cross-sectional study involving 1405 primary school children aged 9-10 years aimed to determine the factors affecting nutritional status of

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Malaysian primary school children was conducted in Selangor (Zaini et al., 2005). The study reported that nutritional status of children was significantly association with both paternal and maternal educational level (Zaini et al., 2005). The findings from Amin et al. (2008), Dieu et al. (2007), Júlíusson et al. (2010) and Zaini et al. (2005) showed that both paternal and maternal educational level were significantly associated with overweight and obesity in children. One might speculate that more educated parents have more health awareness of their children's weight status and therefore bring a healthier life style to whole family (Hesketh, Crawford, Salmon, Jackson, & Campbell, 2007).

However, contradicting result was found in another study done by Noor Azimah et al. (2008) among 612 primary school children aged 9-12 years in Kuala Lumpur. No significant association was found between parental educational levels with children's body weight status. Therefore, in order to have a definite conclusion in term of parental educational level on children's body weight status, more research on this variable should be studied.

2.3.5 Parental monthly income

McDonald, Baylin, Arsenault, Mora-Plazas, and Villamor (2009) reported that children who overweight and obese were often associated with higher household income. The result was in line with a study conducted in Malaysia which highlighted that improvement in socio-economic status would increase the tendency to over-eating among children (Zaini et al., 2005). Higher income families usually have more purchasing power and do less cooking at home. Therefore, they are likely to consume foods outside home which is high in calories, fat and cholesterol; and less nutrient-densed (Wake, Salmon, Waters, Wright, & Hesketh, 2002).

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2.4 BMI of parents and children's body weight status

Studies had been conducted to determine the relationship between paternal and maternal BMI and children's body weight status. Maternal BMI was found to be more associated with childhood overweight and obesity compared to paternal BMI. A cross-sectional study by Johannsen, Johannsen, and Specker (2006) among 148 children aged 3-5 years in South Dakota, United Sates aimed to determine the effects of mothers' and fathers' BMI on percentage body fat and BMI in their children. The findings reported that children's weight status was significantly correlated with maternal BMI compared to paternal BMI.

In Columbia, the prevalence of overweight and obesity was 3.5 times higher in children with their mothers who were obese compared with children whose mothers were normal weight (McDonald et al., 2009). This was a cross-sectional study involving 3075 children aged 5-12 years in Bogata, Columbia (McDonald et al., 2009). This association likely reflects the rapid changes in socioeconomic conditions and lifestyle patterns that affect the ways mothers feed their children. In Ho Chi Minh City, Vietnam the prevalence was 1.87 times higher in children with mothers who were obese (Dieu et al., 2007). Similarly, a study by Garibagaoglu and Bundak (2005) on 125 children aged 4-14 years in Istanbul, Turkey also shown that mothers' BMI was positively associated with children's BMI but not fathers' BMI.

In Malaysia, a cross-sectional study was conducted determine the familial and socio-environmental predictors of overweight and obesity among 1430 primary school children aged 9-12 years in Selangor and Kuala Lumpur (Tung, Shamarina, & Mohd Nasir, 2011). Tung et al. (2011) found that parents' BMI was positively

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correlated with children's weight status. Children with higher BMI were more likely to have overweight or obese mothers compared to children with lower BMI. This correlation had been previously observed in populations from developed countries to undeveloped countries and it's more likely reflects common practiced lifestyle and eating patterns that affected by family environment (Ferreira, & Marques-Vidal, 2008; McDonald et al., 2009; Tung, Shamarina, & Mohd Nasir, 2011).

In short, maternal BMI was more associated with overweight and obesity in children. Children who have overweight or obese mother had a higher risk of being overweight or obese compared with children who have underweight or normal weight mother. External eating refers to eating as a response to stimuli, for example, eating something because it smells good, even in the absence of hunger (Morrison, Power, Nicklas, & Hughes, 2013). Mother's external eating behaviours will directly affect their children's eating behaviours as mother was the one who spend more time and responsible in preparing food and feed their children (Morrison et al., 2013).

2.5 Parental beliefs, attitudes and feeding practices and children's body weight status

Parental beliefs are parental perceptions and concerns regarding their child's obesity proneness (Birch et al., 2001). According to Birch et al. (2001), parental beliefs consist of four factors: perceived parent weight (PPW), perceived child weight (PCW), perceived responsibility (PR) and concern about child weight (CN).

Excessive weight gain in childhood is a result of a number of factors, including poor eating and exercise habits (Anderson & Butcher, 2006; Bray, 2007). Such habits are believed to be shaped in early childhood and hence the involvement

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of parents to identify whether their children are overweight or not are critical to solve this problem. (Sleddens et al., 2008). Parents are unlikely to implement changes to their children's diet or lifestyle unless they recognise the need for such changes or perceive their child at risk. Therefore, an important first step in addressing childhood overweight and obesity is ensuring parents recognise unhealthy weight levels in their children.

A cross-sectional study among 348 primary school children in north-western New South Wales found that 31.0% of caregivers underestimated the weight of their children (Fisher, Fraser, & Alexander, 2006). Of this proportion, 56.0% of the caregivers of overweight children underestimated their children's body weight. The parental inaccuracy of their child's weight status was associated with parents of low education level and cultural difference in the understanding on overweight and its health implications (Fisher et al., 2006).

The finding was similar with few studies in Malaysia. Noor Azimah et al. (2008) reported that parents were underestimated their children's body weight and 38.2% were inaccurate in their perception. However, this study found that parental educational level and their knowledge on nutrition were not significantly associated with children's bod weight status. Parents showed a good knowledge level on nutrition and obesity but the knowledge were insufficient for them to identify their children's actual body weight status. In addition, Tung et al. (2011) found that almost half of the parents (50.8%) did not perceive their child's weight correctly. Most of these parents had children who were overweight, obese or underweight (Tung et al., 2011). This implies there is a need to improve parents' knowledge on the

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classification of body weight status and the health implications of overweight and obesity so that they can be more concern about their children's body weight status.

Another study among 1034 Irish children aged 5-17 years reported a higher percentage of parents of overweight or obese children were unable to recognize their overweight children status. About 86.0% of the parents were less likely to perceive their children's weight correctly if their children were overweight; and approximately 59.0% less likely to be correct if the children were obese, compared to parents of normal weight children (Hudson, McGloin, & McConnon, 2012). Parents' inability to recognize overweight or obesity problem in children is believed to have negative impact on childhood obesity treatment (Hudson et al., 2012).

On the other hand, there were consistent studies showed that the parental feeding responsibility was not significantly associated with children's body weight status. A cross-sectional comparative study which aimed to study parental beliefs, attitudes and practices in child feeding among 175 parents of normal weight, as well as overweight and obese primary school children in Kelantan found that parents of overweight and normal weight groups had the similar level of responsibility in feeding their children (Abdul Manan et al., 2012).

Other than that, parent's concern on their child's weight have to be highlighted as this implies their readiness to make changes in their child's eating habits (Rhee et al., 2005). A cross-sectional study of Noor Azimah et al. (2012) among 612 primary school children aged 9-12 years in Kuala Lumpur found that parents of overweight and obese children were more concerned about their child's weight status compared to the normal children. Another cross-sectional study

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conducted by Tung et al. (2011) among children within same age range in Selangor and Kuala Lumpur also found the similar result, whereby parent's concern about child's weight significantly contribute to a higher risk of overweight and obesity among children. The results from both studies indicate that Malaysian parents were able to recognize overweight problem in their children (Noor Azimah et al., 2012). These results were consistent with a South American study among 232 Chilean primary school children (Mulder, Kain, Uauy, & Seidel, 2009). Mulder et al. (2009) reported that mothers of overweight children were more concerned about their children's body weight status compared to parents of normal weight children.

2.6 Parental feeding practices and children's body weight status

Feeding practices are described as the variety ways of giving food to children which used by parents to control what, when, why and how much children eat (Birch, Fisher, & Davison, 2003). There are three factors used to assess parental feeding practices: monitoring (MN), restriction (RST) and pressure to eat (PE).

Parental feeding practices were associated with children's body weight status because parents are the one who feed their child and direct responsible to the development of childhood obesity (Jansen et al., 2012; Johannsen et al., 2006; Stang & Loth, 2011). Parents can filter, buffer, and interpret the environmental influenceson children's body weight status, thereby playing a critical role in structuring children's early eating environments (Birch, 2006).

Parental monitoring has been defined as the degree to which a parent keeps track of what and how much his or her child eats (Birch et al., 2001). This factor is assessing the extent to which a parent encourages the child to eat by insisting that the

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child finishes all the food on the plate. Research to date has not given a consistent association between parental monitoring and children's BMI. Parental monitoring seems to be more common when mothers perceive their children to be overweight and among mothers who exhibit higher responsibility for their child's weight status (Costa, Pino, & Friedman, 2011). A study by Jansen et al. (2012) among 4987 preschoolers examined whether young children's eating behaviour and parental feeding practices are associated with objectively measured BMI in a large population-based cohort of four-year olds in Netherlands showed that parental monitoring on child's food intake was not associated with child BMI *(p*=.343*)*. Additionally, Gregory, Paxton, and Brozovic (2010) conducted a study that recruited mothers of 2- to 4 year-old children in Australia also reported no significant association between parental monitoring on child food intake and child BMI. This result was in line with previous literatures (Abdul Manan et al., 2012; Mulder et al., 2009; Noor Azimah et al., 2008).

Restriction can relate to restriction of food intake overall, or restriction of the consumption of certain foods (Birch et al., 2001). Parental feeding restriction was a strong predictor of child adiposity (Cardel et al., 2011). It can predict the overeating and excessive weight gain in children. These may impede children's ability to self-regulate energy intake or promote eating in the absence of hunger which could promote overweight and obesity (Birch & Fisher, 1998; Birch et al., 2003).

A study by Montgomery, Jackson, Kelly, and Reilly (2006) found that food restriction by parents was significantly associated with higher BMI and fatness in children. Mothers who were concerned about their child becoming overweight were more likely to use restriction style and less likely to pressure their child to eat (May

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et al., 2007). Joyce and Zimmer-Gembeck (2009) also found the similar result with May et al. (2007) whereby overweight children received higher restriction on food from their parents. In addition, Noor Azimah et al. (2008) found that higher parental restriction on food intake increased the odds of having overweight children. From Jansen et al. (2012), they found that food restriction was positively associated with children's body weight status, a consistent finding with previous literature (Scaglioni et al., 2008).

However, few studies from Australia and the United Kingdom have found no association between parental feeding restriction and children's body weight (Webber et al., 2010; Campbell et al., 2010; Carnell & Wardle, 2007). A longitudinal study among 213 mothers of 7-9 and 9-11 years old children in London found no evidence that restriction caused any increase in weight (Webber et al., 2010). It is still unclear whether parental feeding practices increase obesity risk through behavioural changes on the part of the child; or whether increasing child weight status influences the degree to which parents adopt restrictive parental feeding practices (Stang & Loth, 2011). In addition, Abdul Manan et al. (2012) found that food restricting behaviours of parents on their children were almost similar in both overweight and normal weight groups in Kelantan, Malaysia. These inconsistencies results might be due to the geographically different study location and study samples.

Pressure to eat refers to parents' tendency to pressure their children to eat more food, typically at mealtimes. It has been found to negatively correlate with children's body weight status and adiposity (Birch et al., 2001; Jansen et al., 2012; Stang & Loth, 2011). A cross-sectional study was conducted among 232 Chilean children (125 girls, mean age 11.91 ± 1.56 years and 107 boys mean age 11.98 ±

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1.51 years) found that pressure to eat was significantly correlated with the boys' body weight status ($r = -0.21$, $P < 0.05$) but not significantly associated with girls body weight status (Mulder et al., 2009). In other word, mothers of normal weight sons used more pressure on their children to eat than mothers of overweight sons.

Another study by Keller, Pietrobelli, Johnson, and Faith (2006) aimed to test the differences in maternal feeding attitudes within family according to child weight status reported that mothers exerted lower pressure to eat towards heavier sibling than thinner sibling within families. Two recent studies in Malaysia supported the previous literature. A study by Noor Azimah et al. (2008) among 204 primary school children aged 9-12 years in Kuala Lumpur and Tung et al. (2011) among 1430 primary school children aged 9-12 years in Selangor and Kuala Lumpur found that pressure to eat was negatively correlated with children's BMI. Parents of normal weight children were more likely to pressure their children to eat more food because they are thinner compared with parents of overweight and obese children.

A reason that might explains the children are overweight or obese even though they had received lower pressure to eat is that they may be pressured to eat low-energy-density foods, such as fruits and vegetables, thus resulting in adverse effect of higher BMI (Stang & Loth, 2011). However, cross-sectional findings cannot provide evidence regarding causality. Bi-directional influence is most likely where parental feeding practices do influence child's body weight status. But, the reverse is possible whereby parenting feeding practices are also influenced by child's body weight status (Webber et al., 2010).

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2.7 Children's eating behaviours and children's body weight status

Eating behaviours of young children, such as eating in response to environmental food cues, increase the likelihood of children to have a high BMI (Gregory et al., 2010). These behaviours often measure the variation in eating styles among children which are food approach and food avoidant (Wardle et al.,2001).

Food approach can be explained by the eating behaviours traits that lead to greater appetite in children and it's positively associated with children's BMI (Wardle et al., 2001). On the other hand, food avoidant can be explained by the eating behaviours traits that decrease the appetite in children and it's negatively associated with children's BMI (Wardle et al., 2001). Higher food responsiveness (FR), enjoyment of food (EF), emotional overeating (EOE) and desire to drink (DD) behaviours in children indicates higher approach towards food and higher tendency to gain weight. While higher satiety responsiveness (SR), slowness in eating (SE), emotional under eating (EUE) and food fussiness (FF) behaviours in children indicates they are less sensitive to food and less likely to over-eat.

The scales food responsiveness and enjoyment of food reflect eating in response to environmental food cues. In response to these cues appetitive responses and eating rate have been found to strongly increase in overweight or obese children (Carnell & Wardle, 2007; Carnell & Wardle, 2008). A study by Jansen et al. (2012) also found that the food responsiveness and enjoyment of food were positively associated with children's BMI. The scale desire to drink reflects the desire of children to ask for drinks or have drinks to carry around with them, usually sugar-sweetened drinks (Wardle et al., 2001). Several studies found that frequent consumption of sugar-sweetened drinks was positively associated with children's

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BMI (Sleddens, Kremers, & Thijs, 2008). A decrease in sugar-sweetened beverages intake can significantly reduce BMI among overweight children (Sichieri, Paula Trotte, de Souza, & Veiga, 2009).

Satiety responsiveness represents the ability of a child to reduce food intake after eating to regulate its energy intake. Infants tend to be highly responsive to internal hunger and satiety cues, whereas this level of responsiveness decreases with advancing age (Carnell & Wardle, 2007; Carnell & Wardle, 2008). Thus, during childhood, children will gradually lose the ability to effectively self-regulate energy intake, thereby promoting episodes of over-consumption and subsequently excessive weight gain. Overweight children were found to have weaker satiety responses and stronger appetite responses to food compared to their leaner counterparts (Sleddens et al., 2008). High scores on the scale slowness in eating is characterised by a reduction in eating rate. Compared to their leaner counterparts, overweight children have an increased consumption and have less reduction of their eating rate during the end of a meal (Sleddens et al., 2008).

Food fussiness defined as rejection of a substantial amount of familiar foods as well as 'new' foods, thereby leading to the consumption of an inadequate variety of foods. Higher levels of food fussiness were more likely to be found in underweight children when compared to overweight and normal weight groups (Jansen et al., 2012; Sleddens et al., 2008). A study among 213 children aged 7-9 years old in London reported that fussy behaviour in children was positively associated with children's body weight status (Webber et al., 2010). Viana et al. (2008) found that leaner children were fussier and more likely to reject new food compared to heavier children. Food fussiness could be protective against over-eating in children by

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reducing the choices for a child because of a greater number of dislikes (Webber et al., 2009).

In addition, slowness in eating refers to the eating rate of children as a consequence of lack of enjoyment and interest in food. Fussy children have significantly slower eating rates (Viana et al., 2008). A cross sectional study among 406 families of children aged 7-12 years in London reported that slowness in eating were negatively associated with children's body weight status (Webber et al., 2009). Leaner children were less responsive and sensitive to food compared to heavier children and this could be the protective factor against obesity (Webber et al., 2009).

The scales emotional overeating and emotional under eating can be characterised by either an increase or a decrease in eating in response to a range of negative emotions, such as anger and anxiety. Despite this, the relationship between emotional eating and weight status among children is unclear. A study by Croker, Cooke, and Wardle. (2011) found that emotional eating was most prevalent in the obese children when compare to underweight and normal weight children. Emotional overeating was positively related to children's BMI indicated overweight children were more likely to overeat when they were emotionally affected (Viana et al., 2008; Webber et al., 2009). However, Webber et al. (2009) observed higher emotional under-eating in both the heaviest and lightest groups. Hence, further research is needed to determine whether this is a true effect, but it does at least indicate that emotional overeating and under-eating are not opposites.

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CHAPTER 3

METHODOLOGY

3.1 Study Design

A cross-sectional comparative study aimed to compare the parental beliefs, attitudes and feeding practices and children's eating behaviours between overweight (OW) and normal weight (NW) Standard 4 and 5 children was conducted in four randomly selected primary schools in Puchong, Selangor.

3.2 Study Location

This study was conducted in Puchong where it is situated in Selangor, Malaysia. Selangor is a state with the highest population in Malaysia with 5.6 million people (Department of Statistics Malaysia, 2010). The NHMS 2011 showed that prevalence of obesity among children was 7.3% in Selangor (Institute for Public Health, 2008). Puchong was selected as the study location because it is a growing residential township located in district of Petaling to the south of Kuala Lumpur (Department of Statistics Malaysia, 2010). It is an urban area in Selangor where the ethnicity distribution among the population can represent the population in Malaysia. Puchong has a total of 66, 808 population and of the population are multiracial, 53% are Malay, 29% are Chinese, 16% are Indian, and 2% are from the other ethnic group (Department of Statistics Malaysia, 2010). No recent study was done to determine the prevalence of overweight and obesity among children in Puchong.

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3.3 Sample size determination

The minimum sample size needed in this study was determined by using Gpower 3.1. At least 86 overweight and obese children and 86 normal weight children were required with a medium effect size (d= 0.5) and 90% power at 5 % significant level. In order to account for missing data, unwillingness in participation and non-response rate from parents, an additional 20% of children were needed in this study. Hence, 103 overweight or obese (OW) primary school children and 103 normal weight (NW) primary school children were needed in this study. With an estimated 17.8% prevalence of childhood overweight and obesity (Tee et al., 2002), approximately 600 primary school children needed to be screened in order to get adequate sample size.

Minimum sample size needed	= 86
Additional of 20%	= 86 x 120% =103

Overweight and obesechildren: 17.8% (Tee et al., 2002) = 103	
Total number to be screened : 100.0%	= 579 ≈ 600

3.4 Procedures of data collection

Data collection was conducted from 9th November 2013 until 3rd January 2013 at four National Primary Schools in Puchong, Selangor. Ethical approval from Jawatankuasa Etika Universiti untuk Penyelidikan Melibatkan Manusia (JKEUPM) from Universiti Putra Malaysia (UPM) (Appendix A & B) and Ministry of Education (MOE) (Appendix C) was obtained.

A list of all National Primary School in Puchong, Selangor was first obtained from Ministry of Education. There were a total of 16 National Primary Schools in

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Puchong, Selangor. Figure 3.1 shows the flow chart of the procedures of data collection.

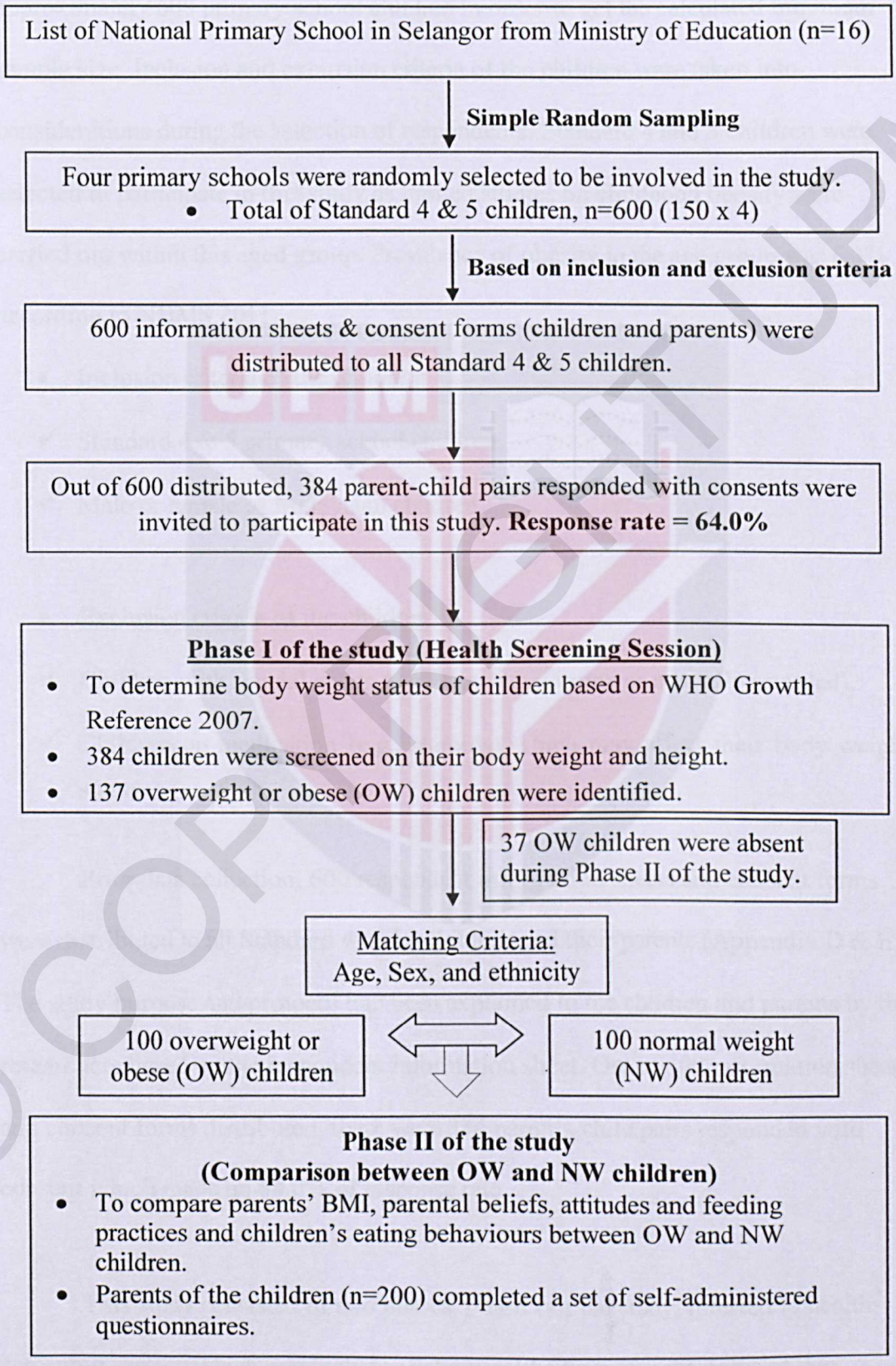

Figure 3.1: Flow chart of procedures of data collection

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From the list, one primary school was estimated to consist of 150 Standard 4 and 5 children. Therefore, four primary schools were randomly selected to screen approximately 600 primary school children in order to get the calculated minimum sample size. Inclusion and exclusion criteria of the children were taken into considerations during the selection of respondents. Standard 4 and 5 children were selected to participate in this study as limited studies on childhood obesity were carried out within this aged group. Prevalence of obesity in the age group was 6.3% according to NHMS 2011.

- Inclusion criteria of the children:

✓ Standard 4 & 5 primary school children.

✓ Male or female of Malaysian children.

- Exclusion criteria of the children:

✓ Children with special needs (e.g., Down syndrome or mentally retarded).

✓ Children on medication (e.g., steroids) which may affect their body weight status.

Prior data collection, 600 respondent information sheets and consent forms were distributed to all Standard 4 and 5 children and their parents (Appendix D & E). The study purpose and protocol had been explained to the children and parents by the researchers based on the respondent information sheet. Out of 600 information sheets and consent forms distributed, there were 384 parents-child pairs responded with consent which made up 64.0% of response rate.

This study consisted of two phases. Phase I of the study, referred to health screening session which conducted to determine the body weight status of the

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children based on WHO Growth Reference 2007. After determining body weight status of the children, 137 overweight or obese children (OW) were determined. They were then match-paired with 137 normal weight children (NW) by sex, age and ethnicity for the Phase II of the study. Phase II of the study, aimed to compare the parents' BMI, parental beliefs, attitudes and feeding practices and children's eating behaviours between OW and NW children. However, 37 OW children were absent during Phase II of the study. With that,100 OW children were match-paired with their NW counterpart. Parents of the match-paired OW and NW children (n=200) were recruited in Phase II of the study, and they completed a set of self-administered questionnaires.

3.5 Instruments

Different instruments were used in the two phases of the study. Detailed descriptions of each instrument are discussed below:

3.5.1 Anthropometric Measurements (Appendix F)

During Phase I of the study, a health screening session was conducted to determine the body weight status of the children. Anthropometric measurements including body weight and height of the children were measured. Body weight was measured using TANITA digital weighing scale to nearest 0.1 kg while height was measured using the SECA Body Meter to nearest 0.1 meter.

BMI-for-age of the children was calculated using WHO Anthroplus Version 1.0.4 software. Then, children were classified into BMI-for-age categories (Table 3.1) based on WHO Growth Reference 2007 (de Onis, Onyango, Borghi, Siyam, Nishida, & Siekmann, 2007). Children who have z-score less than -3 SD classified as severe

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thinness; z-score between -3 SD and -2 SD considered thinness; z-score between -2 SD and +1 SD are normal weight; z-score more than +1 SD are overweight; and more than +2 SD are considered obese.

Table 3.1: Cut off points for BMI-for-age classification

Categories	Z-score
Severe thinness	< -3 SD
Thinness	≥ -3 SD - <-2 SD
Normal weight	≥ -2 SD - ≤ +1 SD
Overweight	> +1 SD
Obese	> +2 SD

3.5.2 Questionnaire for parents (Appendix G)

During Phase II of the study, a set of self-administered questionnaire which included socio-demographic characteristics (sex, ethnicity, marital status, educational level, parental monthly income and occupation), Child Feeding Questionnaire (CFQ) and Children's Eating Behaviours Questionnaire (CEBQ) were brought back by the children to be completed by their parents. Self-reported body weight and height by the parents were also obtained.

- ✓ **Child Feeding Questionnaire (CFQ)**

Parental beliefs, attitudes and feeding practices were assessed by using Child Feeding Questionnaire (CFQ) which developed by Birch et al. (2001). It is a tool to measure and assess the various aspects of parental beliefs, attitude and child feeding practices with a focus on obesity proneness in children. CFQ is designed for they use

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in parents of having children ranging in age from about 2 to 11 years. This questionnaire consists of seven factors, with 31 items that measures two main aspects: parental beliefs and parental control practices.

There are four factors assess the first aspect, parental beliefs related to child's obesity proneness: perceived parent weight (PPW), perceived child weight (PCW), concern about child weight (CN) and perceived responsibility (PR). Perceived parent weight (4 items) is assessing parents' perceptions of their own weight status history. Higher mean score indicates that parents are more likely to perceive themselves to be heavier. Perceived child weight (6 items) is assessing parents' perceptions of their child's weight status history. Higher mean score indicates that parents are more likely to perceive their child to be heavier. Concern about child weight (3 items) is assessing parents' concerns about the child's risk of being overweight. Higher mean score indicates parents are more concern about their weight. Perceived responsibility (3 items) is assessing parents' perceptions of their responsibility for child feeding. Higher mean score indicates that parents are more responsible in feeding their child. However, perceived parent weight factor was excluded because it was not applicable in this study.

Three additional factors from CFQ assess the second aspect, parental control practices and attitudes regarding child feeding: monitoring (MN), restriction (RST) and pressure to eat (PE). Monitoring (3 items) is assessing the extent to which parents oversee their child's eating. Higher mean score indicates that parents are more often in monitoring their child's food intake. Restriction (8 items) is assessing the extent to which parents restrict their child's access to foods. Higher mean score indicates that parents are more restrict on their child's food intake. Pressure to eat (4

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items) is assessing parents' tendency to pressure their children to eat more food, typically at mealtimes. Higher mean score indicates that parents are more likely to pressure their child to eat.

All items were measured using a 5-point Likert-type scale ranging from one to five, with each point on the scale represented by a word. Mean scores for each factor were calculated and the possible mean scores is ranging from one to five score. Higher mean scores indicate higher approach to that particular factor. A back-translation procedure into Malay, Mandarin and Tamil versions were done in order to fit Malay, Chinese and Indian population during data collection. CFQ has not been validated in Malaysia. However, few local studies (Abdul Manan et al., 2012; Noor Azimah et al., 2008; Noor Azimah et al., 2012; Tung et al., 2011) were using this questionnaire. The internal reliability of all domains was 0.73 (Noor Azimah et al., 2012).

CFQ factors	No. item	Scoring (5-point Likert scale, 1 – 5)	Interpretations
1. Perceived child weight	3	Markedly underweight – Markedly overweight Mean score= 1 – 5	Higher score indicates parents are more likely to perceive their child as overweight.
2. Concern about child weight	3	Unconcerned – Very concerned Mean score= 1 – 5	Higher score indicates parents are more concern about their child's weight.
3. Perceived responsibility	3	Never – Always Mean score= 1 – 5	Higher score indicates parents are more responsible in feeding their child.
4. Monitoring	3	Never – Always Mean score= 1 – 5	Higher score indicates parents are more often in monitoring their child's food intake
5. Restriction	8	Disagree – Agree Mean score= 1 – 5	Higher score indicates parents are more restrict on their child's food intake.
6. Pressure to eat		Disagree – Agree Mean score= 1 – 5	Higher score indicate parents are more likely to pressure their child to eat.

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✓ **Children's Eating Behaviour Questionnaire (CEBQ)**

Children's eating behaviours were assessed by using Children's Eating Behaviour Questionnaire (CEBQ) which developed by Wardle, Guthrie, Sanderson, and Rapoport (2001). It is a parent-report instrument with two main aspects (food approach and food avoidant) with eight subscales. A total of 35 items was designed to assess variation in eating styles among children.

Food approach can be explained by the eating behaviours traits that lead to greater appetite in children and it's positively associated with children's BMI. There are four subscales that measured food approach behaviours among children include emotional overeating (EOE), enjoyment of food (EF), food responsiveness (FR) and desire to drink (DD). Emotional overeating can be characterised by an increase in eating in response to a range of negative emotions, such as anger and anxiety. Higher mean score indicates a child will eat more when emotionally affected. Enjoyment of food reflects children's eating in response to environmental food cues. Higher mean score indicates a child has higher enjoyment and interest on food. Food responsiveness reflects children's eating in response to environmental food cues such as hunger or satiety. Higher mean score indicates a child is more responding to food. Desire to drink reflects the desire of children to have drinks to carry around with them, usually sugar-sweetened drinks. Higher mean score indicates a child is more likely to ask for sweetened drinks.

On the other hand, food avoidant can be explained by the eating behaviours traits that decrease the appetite in children and it's negatively associated with children's BMI. Another four subscales that measured food-avoidant behaviours include emotional under-eating (EUE), satiety responsiveness (SR), slowness in

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eating (SE) and food fussiness (FF). Satiety responsiveness represents the ability of a child to reduce food intake after eating to regulate its energy intake. Higher mean score indicates a child feels full easily after consuming small quantity of food. Slowness in eating measures the eating rate of children as a consequence of lack of enjoyment and interest in food. Higher mean score indicates a child has a slower eating rate. Emotional under-eating can be characterised by a decrease in eating in response to a range of negative emotions, such as anger and anxiety. Higher mean score indicates a child is more likely to eat less when emotionally affected. Lastly, food fussiness measures rejection of a substantial amount of familiar foods as well as 'new' foods in children. Higher mean score indicates a child is pickier on their food intake.

All items were measured using a 5-point Likert-type scale ranging from one to five (1=never, 2=rarely, 3=sometimes, 4=often, 5=always). Mean scores for each subscale were then calculated. The possible mean scores is ranging from one to five score. Higher mean scores indicate a greater approach towards that particular eating behaviour. There were five items in the questionnaire required reversed scoring. An example of reversed item in food fussiness subscale: "My child is interested in tasting food she/he hasn't tasted before" The scoring were reversed when entering the data because higher score indicated greater approach towards food fussiness in children. A back-translation procedure into Malay, Mandarin and Tamil versions were done in order to fit Malays, Chinese and Indians population.

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CEBQ subscales	No. item	Scoring (5-point Likert scale, 1- 5) (Never – Always)	Interpretations
1. Enjoyment of Food	4	Mean score= 1 – 5	Higher score indicates a child has higher enjoyment and interest on food.
2. Food Responsiveness	5	Mean score= 1 – 5	Higher score indicates a child is more responding to food.
3. Emotional Overeating	4	Mean score= 1 – 5	Higher score indicates a child will eat more when emotionally affected.
4. Desire to Drink	3	Mean score= 1 – 5	Higher score indicates a child is more likely to ask for sweetened drinks.
5. Satiety Responsiveness	5	Mean score= 1 – 5	Higher score indicates a child feels full easily.
6. Slowness in Eating	4	Mean score= 1 – 5	Higher score indicates a child has slower eating rate.
7. Emotional Under-eating	4	Mean score= 1 – 5	Higher score indicates a child will eat less when emotionally affected.
8. Food fussiness	6	Mean score= 1 – 5	Higher score indicates a child is more picky on food.

3.6 Data Analysis

All the statistical analyses were performed using IBM SPSS Statistics 22. Univariate analyses were used to analyse all the descriptive variables. The results were presented as frequency and percentage for categorical variables; presented as mean value and standard deviation for continuous variables. Independent samples *t*-test was used to determine differences in mean scores of socio-demographic characteristics between OW and NW groups. Meanwhile, Independent samples *t*-test also used to determine differences of parental beliefs, attitudes and feeding practices (CFQ subscales) and children's eating behaviours (CEBQ subscales) between OW and NW groups.

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CHAPTER 4

RESULT AND DISCUSSION

4.1 Phase I of the study

There were two phases of data collection in this study. During Phase I of the study, a health screening session was conducted among all Standard 4 and 5 children from four randomly selected National Primary Schools in Puchong, Selangor. The health screening session aimed to determine the prevalence of overweight and obesity among Standard 4 and 5 primary school children in selected primary schools located at Puchong, Selangor.

4.1.1 Socio-demographic characteristics of children

Socio-demographic characteristics information was obtained during Phase I of the study (n=384). Children filled in their sex, age and ethnicity in the health screening form (Table 4.1). Almost half of the children screened were boys (47.4%) while another half were girls (52.6%). Majority of them were 11 years old (72.9%) and the rest were 10 years old (27.1%). The mean age of the children was 11.10 ± 0.53 years. The children screened comprised 88.3% Malay, 2.9% Chinese, 8.1% Indian and 0.8% other races.

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Table 4.1: Distribution of children by socio-demographic characteristics (n=384)

Variables	Total (n=384) n(%)
Sex	
Boy	182 (47.4)
Girl	202 (52.6)
Age	
10	104 (27.1)
11	280 (72.9)
Mean ± SD (n=361)	11.10 ± 0.53
Ethnicity	
Malay	339 (88.3)
Chinese	11 (2.9)
Indian	31 (8.1)
Others	3 (0.8)

4.1.2 Body weight status of the children

Anthropometric measurements including body weight and height of the children were measured. BMI-for-age of the children was calculated using WHO Anthroplus Version 1.0.4 software. Then, children were classified into BMI-for-age categories based on WHO Growth Reference 2007 (de Onis et al., 2007). The mean values for body weight, height and z-score for BMI-for-age are summarized in Table 4.2. Significant differences were found in height of the children by sex ($p< 0.05$). Girls (142.13 ± 7.64 cm) were significantly taller than boys (139.52 ± 8.49 cm).

Figure 4.1 represents the distribution of body weight status of the children. According to the classification of BMI-for-age based on WHO Growth Reference 2007, more than half of the children were normal weight (52.6%). The prevalence of overweight and obese children were 17.4% and 18.2%, respectively. While the prevalence for thinness and severe thinness were 10.7% and 1.0%, respectively.

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Table 4.2: Mean scores of body weight, height and z-score (BMI-for-age) of the children by sex (n=384)

Anthropometric measurements	Boy	Girl	Total
Body weight (kg)	37.56 ± 12.33	39.49 ± 12.29	38.57 ± 12.34
Height (cm)*	139.52 ± 8.49	142.13 ± 7.64	140.89 ± 8.15
z-score (BMI-for-age)	.28 ± 1.73	.25 ± 1.66	.26 ± 1.69

*** p<0.05 (Independent *t*-test)**

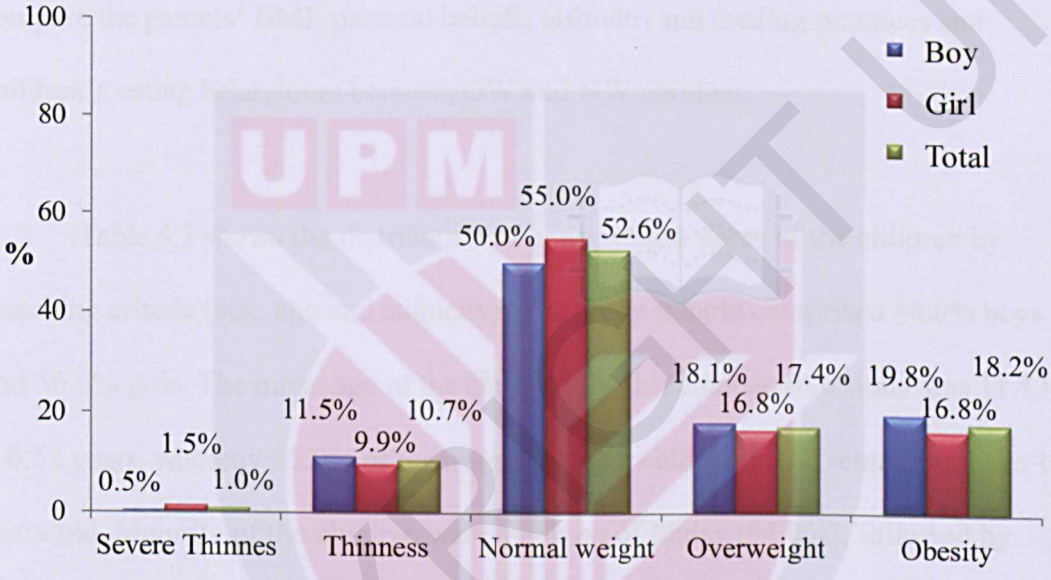

Figure 4.1: Distribution of body weight status of the children (n=384)

Results show that the prevalence of childhood overweight and obesity (35.6%) was three times higher than thinness and severe thinness (11.7%). In the present study, the prevalence of childhood overweight (35.6%) was higher than a previous study by Tung et al (33.9%), while the prevalence of thinness and severe thinness (11.7%) was lower than findings of Tung et al (23.5%) This indicated the coexistence of dual forms of malnutrition in Malaysia (Ihab, Rohana, Manan, Suriati, Zalilah, & Rusli, 2013). Recent study showed that underweight or stunting coexist with overweight and obesity, such as in South Africa (Dieffenbach & Stein, 2012). Therefore, this phenomenon will be a big challenge especially for food intervention and weight management programs to be implemented in the future.

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4.2 Phase II of the study

4.2.1 Matching criteria

Based on the body weight status of the children (n=384), 100 overweight or obese (OW) children were matched with 100 normal weight (NW) children based on matching criteria, namely sex, age and ethnicity. Their parents were recruited as the study subjects for Phase II of the study (n=200). The Phase II of the study aimed to compare the parents' BMI, parental beliefs, attitudes and feeding practices and children's eating behaviours between OW and NW children.

Table 4.3 shows the distribution of body weight status of the children by matching criteria (sex, age and ethnicity). The study sample comprised 44.0% boys and 56.0% girls. The mean age of the children for this comparative study was 11.13 ± 0.52 years, whereby 75.0% of them were 11 years old while the remaining were 10 years old. Majority of the children were made up of Malay (94.0%), followed by Indian (4.0%) and Chinese (2.0%).

Matching criteria	OW (n=100) n (%)	NW (n=100) n (%)
Sex		
Boy	44 (44.0)	44 (44.0)
Girl	56 (56.0)	56 (56.0)
Age		
10	25 (25.0)	25 (25.0)
11	75 (75.0)	75 (75.0)
Ethnicity		
Malay	94 (94.0)	94 (94.0)
Chinese	2 (2.0)	2 (2.0)
Indian	4 (4.0)	4 (4.0)

Table 4.3: Distribution of body weight status of the children by matching criteria

Note: OW= Overweight or obese group
NW= Normal weight group

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Table 4.4 shows the socio-demographic characteristics of parents for OW and NW groups. The mean age for parents was 41.55 ± 7.02 years. There were some missing data in the socio-demographic characteristics of parents. For OW group, majority of the parents involved in this study were mothers (57.0%) followed by fathers (41.0%) and guardians (2.0%). One of the guardians (1.0%) was male while another one (1.0%) was female, which made up a total of 42.0% males and 58.0% females, respectively. For NW group, about half of the parents involved in this study were fathers (50.0%) while another half were mothers (49.0%), only 1.0% was guardian. The guardian was male which made up a total of 51.0% males and 49.0% females in the NW group.

The percentage distribution of Malay, Chinese and Indian parents for OW group were 94.0%, 3.0% and 3.0% respectively whereas for NW group were 96.0%, 2.0% and 2.0% respectively. From Table 4.4, 97.0% of the parents for both OW and NW groups were married, 1.0% were divorced and the remaining 2.0% were widow.

Table 4.4: Socio-demographic characteristics of parents by body weight status of children (n=200)

Variables	OW (n=100) n (%)	NW (n=100) n (%)
Relationship with children		
Father	41 (41.0)	50 (50.0)
Mother	57 (57.0)	49 (49.0)
Guardian	2 (2.0)	1 (1.0)
Sex		
Male	42 (42.0)	51 (51.0)
Female	58 (58.0)	49 (49.0)
Ethnicity		
Malay	94 (94.0)	96 (96.0)
Chinese	3 (3.0)	2 (2.0)
Indian	3 (3.0)	2 (2.0)
Marital status		
Married	97 (97.0)	97 (97.0)
Divorced	1 (1.0)	1 (1.0)
Widow	2 (2.0)	2 (2.0)

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Table 4.4: Socio-demographic characteristics of parents by body weight status of children (n=200) (con't)

Variables	OW (n=100) n (%)	NW (n=100) n (%)
Father's educational level (n=172)	*n=86	*n=86
No formal schooling	1 (1.2)	0 (0.0)
UPSR (Primary School Evaluation Examination)	5 (5.8)	1 (1.2)
PMR (Lower Secondary Evaluation Examination)	8 (9.3)	8 (9.3)
SPM (Malaysian Certificate of Educational)	43 (50.0)	46 (53.5)
STPM (Malaysian Certificate of Higher Educational)	11 (12.8)	21 (24.4)
Bachelor Degree	16 (18.6)	8 (9.3)
Master/PhD	2 (2.3)	2 (2.3)
Mother's educational level(n=168)	*n=87	*n=81
No formal schooling	1 (1.1)	0 (0.0)
UPSR (Primary School Evaluation Examination)	5 (5.7)	3 (3.7)
PMR (Lower Secondary Evaluation Examination)	11 (12.6)	4 (4.9)
SPM (Malaysian Certificate of Educational)	44 (50.6)	44 (54.3)
STPM (Malaysian Certificate of Higher Educational)	16 (18.4)	16 (19.8)
Bachelor Degree	8 (9.2)	12 (14.8)
Master/PhD	2 (2.3)	2 (2.5)
Parental monthly income (n=151)	*n=73	*n=78
≤ RM 999	2 (2.7)	1 (1.3)
RM 1000-RM 1999	14 (19.2)	13 (16.7)
RM 2000-RM 2999	8 (11.0)	11 (14.1)
RM 3000-RM 3999	16 (21.9)	20 (25.6)
RM 4000-RM 4999	6 (8.2)	4 (5.1)
RM 5000-RM 5999	5 (6.8)	5 (6.4)
RM 6000-RM 6999	7 (9.6)	5 (6.4)
RM 7000-RM 7999	3 (4.1)	6 (7.7)
RM 8000-RM 9999	4 (5.5)	5 (6.4)
≥ RM 10000	8 (11.0)	8 (10.3)
Mean ± SD (RM)	4891.29 ± 3575.17	5136.54 ± 4208.06
****Parental monthly income (n=151)**	*n=73	*n=78
≤ RM 999	2 (2.7)	1 (1.3)
RM 1000-RM 1999	14 (19.2)	13 (16.7)
RM 2000-RM 2999	8 (11.0)	11 (14.1)
RM 3000-RM 3999	16 (21.9)	20 (25.6)
RM 4000-RM 4999	6 (8.2)	4 (5.1)
RM 5000-RM 5999	5 (6.8)	5 (6.4)
RM 6000-RM 6999	7 (9.6)	5 (6.4)
RM 7000-RM 7999	3 (4.1)	6 (7.7)
RM 8000-RM 9999	4 (5.5)	5 (6.4)
≥ RM 10000	8 (11.0)	8 (10.3)
Mean ± SD (RM)	4891.29 ± 3575.17	5136.54 ± 4208.06
*****Father's occupation**	*n=85	*n=89
Managers	7 (8.2)	5 (5.6)
Professionals	22 (25.9)	15 (16.9)
Technicians and Associate Professionals	16 (18.8)	19 (21.3)
Clerical Support Workers	5 (5.9)	8 (9.0)
Service and Sales Workers	9 (10.6)	18 (20.2)
Craft and Related Trades Workers	1 (1.2)	4 (4.5)
Plant and Machine-operators	23 (27.1)	19 (21.3)
Elementary Occupations	1 (1.2)	1 (1.0)
Retired	1 (1.2)	0

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Table 4.4: Socio-demographic characteristics of parents by body weight status of children (n=200) (con't)

Variables	OW (n=100) n (%)	NW (n=100) n (%)
***Mother's occupation	*n=85	*n=84
Managers	2 (2.4)	2 (2.4)
Professionals	19 (22.4)	19 (22.6)
Technicians and Associate Professionals	2 (2.4)	3 (3.6)
Clerical Support Workers	10 (11.8)	17 (20.2)
Service and Sales Workers	2 (2.4)	4 (4.8)
Plant and Machine-operators	4 (4.7)	3 (3.6)
Elementary Occupations	1 (1.2)	1 (1.2)
Housewife	45 (52.9)	35 (41.7)

Note: *There were some missing data on socio-demographic characteristics of parents.

Source:

1) **Household Income and Basic Amenities Survey Report 2012
2) ***Malaysia Standard Classification of Occupations 2008 (MASCO)

For educational level of father, results shows that majority of the fathers for OW group (50.0%) and NW group (53.5%) had attained at least SPM level, followed by degree level (18.6%) for fathers of OW group and STPM level (24.4%) for fathers of NW group. Only 1.2% of the fathers of OW group did not receive any formal educational while all fathers of NW group had attained formal schooling. For educational level of mother, majority of the mothers for OW group (50.6%) and NW group (54.3%) had attained at least SPM level, followed by STPM level, 18.4% for mothers of OW group and 19.8% for mothers of NW group. Only 1.1% of the mothers for OW group did not receive any formal educational while all of the mothers for NW group had attained formal schooling.

Parental monthly income was classified according to Household Income and Basic Amenities Survey Report 2012 (Department of Statistics Malaysia, 2012). Results from Table 4.4 shows the mean parental monthly income was RM 4891.29 ±

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3575.17 for parents of OW group and RM 5136.54 ± 4208.06 for parents of NW group. For OW group, about one in five parents (21.9%) earned between RM 3000 to RM 3999 per month. For NW group, about one in four parents earned between (25.6%) RM 3000 to RM 3999 per month. The second highest ranges of parental monthly income for both groups were between RM 1000 to RM 1999 (OW: 19.2%; NW: 16.7%), followed by RM 2000 to RM 2999 (OW: 11.0%; NW: 14.1%).

Occupation of parents was classified according to Malaysia Standard Classification of Occupations 2008 (MASCO) (Department of Statistics Malaysia, 2008) as shown in Table 4.4. For occupation of fathers, all of the fathers for both groups were employed, and 1.2% of fathers for OW group had retired. The most prevalent occupation among fathers for both OW and NW groups was plant and machine-operators (OW: 27.1%; NW: 21.3%) which included lorry drivers and operators. Only 1.2% of parents for OW group, and 1.0% of parent for NW group work as elementary occupation, for example cleaner or construction workers. Majority of the mothers were housewives (OW: 52.9%; NW: 41.7%). About one in five parents for OW and NW groups worked as professionals such as medical doctor and scientist (OW: 22.4%; NW: 22.6%).

4.2.2 BMI of parents

Self-reported body weight and height of fathers and mothers were obtained and their BMI were calculated. Parents were then categorized into four categories: underweight, normal weight, overweight and obese based on WHO classification of BMI for adult. Table 4.5 shows the distribution of parents by BMI.

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Ho1: There are no significant differences in BMI of parents (father) between OW and NW children.

BMI of father

From Table 4.5, the mean BMI of fathers for OW group was 27.08 ± 4.80 kgm^{-2} and for NW group was 26.54 ± 4.14 kgm^{-2}, respectively. This indicated that fathers of OW group had slightly higher mean scores than fathers for NW group but the differences were not significant ($p<0.05$). Majority of the fathers for OW group were overweight (42.6%) and obese (22.1%). In other words, about two in five fathers were overweight while one in five fathers was obese. Only 1.5% of the fathers of OW group were underweight. For NW group, majority of the fathers were normal weight (41.9%) but none of the fathers were underweight. There were 39.2% of the fathers categorized as overweight and 18.9% were obese respectively. As a comparison, OW group had higher percentage of overweight (OW vs NW: 42.6% vs 39.2%) and obese (OW vs NW: 22.1% vs 18.9%) fathers compared to NW group. In contrast, NW group (41.9%) had higher percentage of normal weight fathers compared to OW group (33.8%). The differences were not significant because almost all fathers for both groups were working (Table 4.4). They spent less time with their children as they had to go to work in the morning and came back in the late evening. They had their meals at outside and often missed the chance to have meals with their children. Therefore, body weight status of fathers did not represent the body weight status of children.

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Table 4.5: Distribution of parents by BMI

Variables	OW (n=100) n (%)	NW (n=100) n (%)	χ^2/t	p
BMI of father (n=142)	*n=68	*n=74		
Underweight	1 (1.5)	0 (0.0)	1.970	0.579
Normal weight	23 (33.8)	31 (41.9)		
Overweight	29 (42.6)	29 (39.2)		
Obese	15 (22.1)	14 (18.9)		
Mean ± SD (kgm^{-2})	27.08 ± 4.80	26.54 ± 4.14	0.719	0.473
BMI of mother (n=141)	*n=74	*n=67		
Underweight	1 (1.4)	4 (6.0)	18.452	0.001
Normal weight	19 (25.7)	37 (55.2)		
Overweight	34 (45.9)	20 (29.9)		
Obese	20 (27.0)	6 (9.0)		
Mean ± SD (kgm^{-2})	27.78 ± 5.52	24.38 ± 3.58	4.388	0.001

Note: *There were some missing data on socio-demographic characteristics of parents.

Ho2: There are no significant differences in BMI of parents (mother) between OW and NW children.

BMI of mother

As shown in Table 4.5, the mean BMI of mothers for both OW and NW groups were 27.78 ± 5.52 kgm^{-2} and 24.38 ± 3.58 kgm^{-2}, respectively. Majority of the mothers of OW group were overweight (45.9%) and obese (27.0%). In other words, about one in two mothers was overweight and about one in three mothers was obese. Only 1.4% of the mothers of OW group were underweight. For NW group, more than half of the mothers were normal weight (55.2%). The prevalence of overweight and obese for the mothers of NW group was 29.9% and 9.0% respectively. In short, OW group had higher percentage of overweight (OW vs NW: 45.9% vs 29.9%) and obese (OW vs NW: 27.0% vs 9.0%) mothers compared to NW group. In contrast, NW group (55.2%) had higher percentage of normal weight mothers compared to OW group (25.7%).

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Significant differences were found in mean BMI of mothers between OW and NW groups ($p<0.05$) whereby mothers of OW group had higher mean scores compared to mothers of NW group. Therefore, overweight or obese children were more likely to have overweight or obese mothers. This result was consistent with previous studies (Dieu et al., 2007; Ferreira, & Marques-Vidal, 2008; McDonald et al., 2009; Tung et al., 2011). About half of the mothers in this study were housewife, so mothers spent more time with their children compared to fathers. Thus, children set their mothers as their role model, they will followed their mothers' eating patterns and how mothers eat will actually affect child's eating behaviours (Morrison et al., 2012).

4.2.3 Parental beliefs, attitudes and feeding practices

Parental beliefs, attitudes and feeding practices were assessed by using Child Feeding Questionnaire (CFQ) (Birch et al., 2001). In this study, six factors with 24 items in CFQ were used (perceived child weight, concern about child weight, perceived responsibility, monitoring, restriction and pressure to eat). All the items were measured using a 5-point Likert-type scale ranging from one to five, with each point on the scale represented by a word. The possible mean scores were ranging from one to five score. Higher mean scores indicated a greater approach towards that particular eating behaviour.

Table 4.6 represents the distribution of parents by items of Child Feeding Questionnaire factors (CFQ). There were three items measured the perceived child weight factor. An example item was what are their perceptions towards their child's body weight is when they were 4-6 years old. Majority of the parents of OW children (71.0%) perceived their children as normal weight when their children were 4-6

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Table 4.6: Distribution of parents by items in Child Feeding Questionnaire (CFQ) factors (n=200) (OW: n=100; NW: n=100)

CFQ factors	No	Items	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)
			Markedly underweight		Underweight		Normal weight		Overweight		Markedly overweight	
Perceived child weight (PCW)	1.	What is your perception towards your child's body weight during the first year of life?	6.0	4.0	5.0	8.0	84.0	87.0	4.0	1.0	1.0	0
	2.	What is your perception towards your child's body weight when your child is 1-3 years old?	2.0	3.0	7.0	11.0	80.0	82.0	10.0	4.0	1.0	0
	3.	What is your perception towards your child's body weight when your child is 4-6 years old?	1.0	2.0	3.0	15.0	71.0	78.0	25.0	5.0	0	0
			Unconcerned		A little concerned		Concerned		Fairly concerned		Very concerned	
Concern about child weight (CN)	4.	How concerned are you about your child eating too much when you are not around her?	1.0	0	8.0	11.0	25.0	24.0	45.0	43.0	21.0	22.0
	5.	How concerned are you about your child having to diet to maintain a desirable weight?	0	4.0	10.0	13.0	21.0	22.0	45.0	42.0	24.0	19.0
	6.	How concerned are you about your child becoming over weight?	2.0	0	4.0	3.0	14.0	17.0	29.0	27.0	51.0	53.0
			Never		Seldom		Half of the time		Most of the time		Always	
Perceived responsibility (PR)	7.	When your child is at home, how often are you responsible for feeding her?	1.0	2.0	4.0	1.0	19.0	15.0	30.0	37.0	46.0	45.0
	8.	How often are you responsible for deciding what your child's portion sizes are?	4.0	2.0	10.0	9.0	30.0	30.0	35.0	31.0	21.0	28.0
	9.	How often are you responsible for deciding if your child has eaten the right kind of foods?	4.0	0	7.0	3.0	25.0	19.0	27.0	33.0	37.0	45.0
			Never		Rarely		Sometimes		Mostly		Always	
Monitoring (MN)	10.	How much do you keep track of the sweets (candy, ice cream cake, pies, pastries) that your child eats?	2.0	2.0	14.0	9.0	24.0	34.0	35.0	27.0	250	28.0
	11.	How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?	4.0	0	13.0	13.0	27.0	27.0	34.0	27.0	22.0	33.0
	12.	How much do you keep track of the high-fat foods that your child eats?	1.0	0	13.0	6.0	28.0	44.0	32.0	23.0	26.0	27.0

Table 4.6: Distribution of parents by items in Child Feeding Questionnaire (CFQ) factors (n=200) (OW: n=100; NW: n=100) (con't)

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CFQ factors	No.	Items	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)
			Disagree		Slightly disagree		Neutral		Slightly agree		Agree	
Restriction to eat (RST)	13.	I have to be sure that my child does not eat too many sweets (candy, icecream, cake or pastries).	1.0	2.0	6.0	5.0	10.0	14.0	16.0	27.0	67.0	52.0
	14.	I have to be sure that my child does not eat too many high-fat foods.	1.0	3.0	5.0	4.0	12.0	20.0	21.0	17.0	61.0	56.0
	15.	I have to be sure that my child does not eat too much of her favorite foods.	1.0	8.0	6.0	7.0	21.0	25.0	28.0	34.0	44.0	26.0
	16.	I intentionally keep some foods out of my child's reach.	10.0	9.0	12.0	15.0	31.0	30.0	18.0	20.0	29.0	26.0
	17.	I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behaviour.	33.0	35.0	30.0	30.0	19.0	23.0	13.0	9.0	5.0	3.0
	18.	I offer my child her favorite foods in exchange for good behaviour.	25.0	27.0	30.0	23.0	20.0	26.0	15.0	16.0	10.0	8.0
	19.	If I did not guide or regulate my child's eating, she would eat too many junk foods.	5.0	6.0	12.0	8.0	6.0	17.0	26.0	19.0	51.0	50.0
	20.	If I did not guide or regulate my child's eating, she would eat too much of her favorite foods.	7.0	3.0	8.0	4.0	11.0	17.0	27.0	28.0	47.0	48.0
Pressure to eat (PE)	21.	My child should always eat all of the food on her plate.	2.0	2.0	9.0	8.0	13.0	17.0	24.0	21.0	52.0	52.0
	22.	I have to be especially careful to make sure my child eats enough.	0	0	3.0	3.0	8.0	14.0	23.0	22.0	67.0	61.0
	23.	If my child says ``I'm not hungry", I try to get her to eat anyway.	23.0	9.0	25.0	13.0	22.0	19.0	13.0	26.0	17.0	33.0
	24.	If I did not guide or regulate my child's eating, she would eat much less than she should.	15.0	5.0	20.0	13.0	30.0	20.0	18.0	22.0	17.0	40.0

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years old. Similar result was identified among parents of NW children where most of them (78.0%) perceived their children as normal weight when their children were 4-6 years old. As a comparison, the percentage of parents who perceived their children as normal weight was slightly higher among parents of NW group compared to their OW counterparts. Meanwhile, result shows that parents of OW group were able to recognize their children as overweight. A higher percentage of parents of OW group (OW: 25.0%; NW: 5.0%) were found in perceiving their children as overweight since their children were 4-6 years old.

Three items revealed parents' concern level about their child weight, for example, how concerns are the parents about their child eating too much when they are not around them. Majority of the parents for both OW and NW groups rated "fairly concerned" for this item. The percentages of parents who rated their concern level about their children's weight were quite similar between two groups (OW: 45.0%; NW: 43.0%). This indicated that parents were quite worry about the amount of food intake by their children especially when they were not beside them, regardless their children's current body weight.

Besides, there were three items that measured the perceived responsibility factor. This factor basically determined parents' responsibility in feeding their children. An example item was how often are the parents responsible for deciding what their child's portion sizes are. For this item, most of the parents for both groups chosen "most of the time" followed by "half of the time" and "always". As a comparison, the percentage of parents of OW group (21.0%) who chosen "always" was slightly lower than parents of NW group (28.0%). This indicated that parents of

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NW group were more responsible in feeding their children by controlling child's portion sizes.

In terms of monitoring factor, three items measured the parental level of monitoring on child's food intake. The questions asked how often did the parents keep track of the less healthy food, such as sweets (candy, ice cream cake, pies, pastries); snack food (potato chips, Doritos, cheese puffs); and high-fat foods that their child eats. Among the NW group, majority of the parents rated "sometimes" (44.0%). This was because they know their child will keep them away from those less healthy foods. On the other hand, among the OW group, majority of the parents rated "Mostly" (35.0%). This means that the parents monitored their child's food intake quite often due to the child's body weight. They worried that their child was unable to control themselves from those less healthy food which may even raise their body weight.

There were eight items that measured the parental restriction on food. Basically, all the eight items measure the agreement of parents on restricting their child from sweets (candy, icecream, cake or pastries), high fat foods and their favourite foods. As overall, higher percentages of the parents for OW children strongly agreed that they restricted certain food especially sweets (OW: 67.0%; NW: 52.0%) and high fat foods (OW: 61.0%; NW: 56.0%) from their children compare to their NW counterparts. Parents of OW children intended to prevent their child from getting bigger by restricting them from high sugar and high fat foods.

There were four items measured the parental pressure to eat. These items measured how likely the parents pressure their child to eat. For example, will they

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ask their child to finish all the food on the plate, or will they ask their child to eat even though their child was not hungry. From Table 4.6, parents for both groups (OW: 52.0%; NW: 52.0%) agreed that they did ask their child to finish all the food on plate regardless their body weight status to prevent food wastage. Besides, lower percentage of parents for OW children (17.0%) agreed that they asked their child to eat although the child was not hungry compared to their NW counterparts (33.0%). This indicated that parents of OW children were less likely to pressure their child to eat when the child was still full to prevent overeat. Parents of NW children tend to pressure their child to eat to ensure they have enough food intakes.

Ho3: There are no significant differences in parental beliefs, attitudes and feeding practices between OW and NW children.

Independent samples t-tests were used to compare the mean scores of parental beliefs, attitudes and feeding practices in CFQ (perceived child weight, concern about child weight, perceived responsibility, monitoring, restriction and pressure to eat) between OW and NW group (Table 4.7).

Table 4.7: Mean scores of parental beliefs, attitudes and feeding practices in CFQ between OW and NW children

Parental beliefs, attitudes and feeding practices	OW (n=100) Mean ± SD	NW (n=100) Mean ± SD	*t*	*p*
1. Perceived child weight	3.03 ± 0.43	2.86 ± 0.38	3.052	0.003*
2. Perceived responsibility	3.87 ± 0.81	4.05 ± 0.75	-1.666	0.097
3. Concern about child weight	3.94 ± 0.78	3.88 ± 0.78	0.546	0.586
4. Monitoring	3.64 ± 0.92	3.74 ± 0.90	-0.726	0.469
5. Restriction	3.65 ± 0.55	3.53 ± 0.52	1.489	0.138
6. Pressure to eat	3.62 ± 0.74	3.99 ± 0.84	-3.310	0.001*

*$p<0.05$ (Independent *t*-test)

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Significant difference was found in perceived child weight factor ($t=3.052$, $p<0.05$). OW children had higher scores (3.03 ± 0.43) compared to NW children (2.86 ± 0.38) which means that parents of OW children were able to perceive their child as overweight compared to NW children. This finding was consistent with the previous studies which parents of OW children tend to perceive their as overweight ($p < 0.05$) as compared to NW children (Birch et al. 2003; Cheong, 2008). According to Patrick, Jennifer and Robert (2007), mothers of overweight children were able to recognize their children as overweight.

Other than that, significant difference was found in pressure to eat factor ($t=-3.310$, $p<0.05$) between the two groups. However, lower mean scores were found in OW children (3.62 ± 0.74) than NW children (3.99 ± 0.84) which presented that OW children received lower parental pressure to eat than NW children. This finding was in line with previous studies (Birch et al., 2003; Keller et al., 2006). For instance, Keller et al. (2006) found that parents of heavier children were less likely to pressure them on food than those with thinner children. The findings from present study showed consistent results with previous studies (Abdul Manan et al., 2012; Cheong, 2008). This was the natural response from parents to give more food to thinner children to ensure they have enough food intakes (Galloway, Fiorito, Francis, & Birch, 2006). On the other hand, less pressure to eat were given by parents to heavier children because they will ask for more food if they still yet to feel full (Galloway et al., 2006).

For perceived responsibility factor, the mean scores for OW children and NW children were 3.87 ± 0.81 and 4.05 ± 0.75, respectively. No significant difference was found between two groups ($t= -1.666$, $p >0.05$). This finding was similar with

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previous studies (Abdul Manan et al., 2012; Cheong, 2008). Parents of both groups perceived similar responsibility level in feeding their children regardless their body weight status.

Next, no significant difference was found in the mean scores of concern about child weight factor between the two groups ($t= 0.546$, $p >0.05$). OW children had almost similar score with their NW counterparts (OW: 3.94 ± 0.78; NW: 3.88 ± 0.78). This finding was similar to the previous literature (Abdul Manan et al., 2012; Noor Azimah et al., 2008). Both groups had similarly high concern level mean scores which inferring parents for overweight and normal weight children were similarly concerns on their children's food intakes regardless their body weight status.

There was no significant difference found in mean scores of parental monitoring factor between the two groups ($t= -0.726$, $p>0.05$). The means score for NW children was 3.74 ± 0.90 while the mean score for OW children was 3.64 ± 0.92. Both groups had similarly high monitoring mean scores. This finding was in line with a study done by Abdul Manan et al in Kelantan, Malaysia among primary school children. Parents for both OW and NW groups had the same monitoring level on the food intake of their children. This was because parents were unable to keep track on every food that their children eat especially when children have their meals at school canteen, and hence parents have to be more cautious when giving pocket money to their children. They have to teach and deal with their children on which food to buy at the school canteen.

In term of parental restriction on food, no significant difference was found in the mean scores of restriction factor between the two groups ($t= 1.489$, $p>0.05$). The

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mean score for OW children was 3.65 ± 0.55 while mean score for NW children was 3.53 ± 0.52. Both groups had similar high restriction mean scores. This shows that parents for both groups were similarly strict in restricting the food intake by their children. Parents of OW children were able to perceive their children as overweight and they were aware of the availability of unhealthy food; however, some of them were still lack of perceived need and motivation to restrict their children from eating those foods (Pettigrew et al., 2012). Therefore, the differences in restriction level were not significant between the two groups in the present study. This finding supported a previous Malaysian study (Abdul Manan et al., 2012). On the other hand, present study had found a contradict result with previous study which reporting the difference in the mean scores for parental feeding restriction between overweight and normal weight was significant ($p<0.05$) (Cheong, 2008; Faith et al., 2004; Noor Azimah et al., 2008; Tung et al., 2011). These inconsistent results may be due to the different study locations and study samples within each study. Cultural differences between races and history will shape and influence the way of parental feeding as well as the perception towards body weight status of a child.

In short, parents of overweight children were able to perceive their child as overweight and they were less likely to pressure them to eat. Meanwhile, parents for both groups had the similar responsibility level, concern level and monitoring level in feeding their children regardless their body weight status.

4.2.4 Children's eating behaviours

Children's eating behaviours were assessed by using Children's Eating Behaviour Questionnaire (CEBQ) (Wardle et al., 2001). All items were measured using a 5-point Likert-type scale ranging from one to five (1=never, 2=rarely,

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3=sometimes, 4=often, 5=always). The possible mean scores were ranging from one to five score. Higher mean scores indicated a greater approach towards that particular eating behaviour.

Table 4.8 shows the distribution of children by items in Children's Eating Behaviours Questionnaire (CEBQ). There are four items which referred to enjoyment of food subscale. Higher score indicated the children had higher enjoyment and interests on food. From Table 4.8, there were higher percentages of parents of OW children answered "always" for all the four items compared to their NW counterparts. For example, about one in five OW children (22.0%) always interested in food but only one in eight NW children (13.0%) were interested in food all the time. This indicated that OW children had higher interest and enjoyment on food and they always looking forward for mealtimes compared to their NW counterparts.

Besides, there were five items that described the food responsiveness among children. Children were considered to be more responsive towards food if they had higher score. As an overall, OW children were more responding towards food. Parents of OW children reported that their children always asking for food and even if they were full, they will still find rooms to eat their favourite foods. In contrast, parents of NW children reported that their children were less likely to ask for food and they would not eat any food if they were full. Majority of the parent of OW (43.0%) and NW (60.0%) children answered "never" for the statement "Given the choice, my child would eat most of the time." This shows that the both groups can control themselves from eating food all the time regardless their body weight status.

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Table 4.8: Distribution of children by items in Children's Eating Behaviours Questionnaire (CEBQ) (n=200) (OW: n=100; NW: n=100)

CEBQ Subscales	No.	Items	Never		Rarely		Sometimes		Often		Always	
			OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)
Enjoyment of food (EF)	1.	My child loves food.	0	1.0	6.0	5.0	23.0	45.0	40.0	28.0	31.0	21.0
	2.	My child is interested in food.	6.0	3.0	10.0	22.0	27.0	43.0	35.0	19.0	22.0	13.0
	3.	My child looks forward to mealtimes.	18.0	25.0	30.0	29.0	26.0	39.0	13.0	4.0	13.0	3.0
	4.	My child enjoys eating.	2.0	0	3.0	9.0	15.0	33.0	43.0	31.0	37.0	27.0
Food responsiveness (FR)	5.	My child is always asking for food.	14.0	10.0	22.0	25.0	36.0	50.0	12.0	11.0	16.0	4.0
	6.	If allowed to, my child would eat too much.	22.0	43.0	23.0	24.0	26.0	25.0	21.0	4.0	8.0	4.0
	7.	Given the choice, my child would eat most of the time.	43.0	60.0	25.0	24.0	20.0	14.0	6.0	1.0	6.0	1.0
	8.	Even if my child is full up she/he finds room to eat his/her favourite food.	23.0	21.0	25.0	31.0	35.0	37.0	9.0	8.0	8.0	3.0
	9.	My child decides that she/he doesn't like a food, even without tasting it.	21.0	20.0	40.0	33.0	30.0	34.0	8.0	6.0	1.0	7.0
Emotional over-eating (EOE)	10.	My child eats more when worried.	35.0	48.0	31.0	35.0	24.0	14.0	6.0	2.0	3.0	1.0
	11.	My child eats more when annoyed.	44.0	49.0	33.0	36.0	18.0	13.0	3.0	1.0	2.0	1.0
	12.	My child eats more when anxious.	47.0	55.0	33.0	24.0	16.0	14.0	2.0	4.0	2.0	3.0
	13.	My child eats more when she/he has nothing else to do.	25.0	27.0	23.0	37.0	28.0	27.0	18.0	6.0	6.0	3.0
Desire to drink (DD)	14.	My child is always asking for a drink.	10.0	4.0	12.0	14.0	37.0	42.0	25.0	25.0	16.0	15.0
	15.	If given the chance, my child would drink continuously throughout the day.	28.0	28.0	39.0	36.0	22.0	28.0	8.0	6.0	3.0	2.0
	16.	If given the chance, my child would always be having a drink.	8.0	11.0	25.0	19.0	28.0	44.0	19.0	18.0	20.0	8.0
Satiety responsiveness (SR)	*17.	My child has a big appetite.	21.0	5.0	19.0	8.0	39.0	51.0	13.0	20.0	8.0	16.0
	18.	My child leaves food on his/her plate at the end of a meal.	24.0	18.0	47.0	34.0	23.0	37.0	3.0	5.0	3.0	6.0
	19.	My child gets full before his/her meal is finished.	18.0	8.0	45.0	29.0	25.0	49.0	9.0	9.0	3.0	5.0
	20.	My child gets full up easily.	16.0	11.0	39.0	31.0	31.0	37.0	11.0	13.0	3.0	8.0
	21.	My child cannot eat a meal if she/he has had a snack just before.	27.0	13.0	31.0	39.0	37.0	39.0	5.0	6.0	0	3.0

* Reversed item

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Table 4.8: Distribution of children by items in Children's Eating Behaviours Questionnaire (CEBQ) (n=200) (OW: n=100; NW: n=100) **(con't)**

CEBQ subscales	No.	Items	Never		Rarely		Sometimes		Often		Always	
			OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)	OW (%)	NW (%)
Slowness in eating (SE)	*22.	My child finishes his/her meal quickly.	9.0	7.0	18.0	10.0	42.0	44.0	19.0	30.0	12.0	9.0
	23.	My child eats slowly.	17.0	10.0	29.0	29.0	39.0	44.0	8.0	6.0	7.0	11.0
	24.	My child takes more than 30 minutes to finish a meal.	28.0	30.0	38.0	40.0	26.0	22.0	3.0	5.0	5.0	3.0
	25.	My child eats more and more slowly during the course of a meal.	27.0	35.0	34.0	27.0	28.0	27.0	6.0	6.0	5.0	5.0
Emotional under-eating (EUE)	26.	My child eats less when angry.	23.0	17.0	30.0	24.0	38.0	48.0	5.0	6.0	4.0	5.0
	27.	My child eats less when she/he is tired.	9.0	8.0	21.0	21.0	48.0	57.0	14.0	7.0	8.0	7.0
	28.	My child eats more when she/he is happy.	13.0	13.0	15.0	28.0	36.0	40.0	26.0	11.0	10.0	8.0
	29.	My child eats less when upset.	33.0	34.0	38.0	27.0	24.0	32.0	3.0	4.0	2.0	3.0
Food fussiness (FF)	30.	My child refuses new foods at first.	21.0	16.0	36.0	31.0	34.0	42.0	7.0	6.0	2.0	5.0
	*31.	My child enjoys tasting new foods.	20.0	14.0	15.0	19.0	50.0	52.0	10.0	14.0	5.0	1.0
	*32.	My child enjoys a wide variety of foods.	24.0	17.0	36.0	23.0	23.0	41.0	8.0	11.0	9.0	8.0
	33.	My child is difficult to please with meals.	44.0	22.0	33.0	30.0	16.0	39.0	3.0	7.0	4.0	2.0
	*34.	My child is interested in tasting food she/he hasn't tasted before.	8.0	3.0	15.0	16.0	38.0	39.0	30.0	34.0	9.0	8.0
	35.	My child decides that she/he doesn't like a food, even without tasting it.	21.0	20.0	40.0	33.0	30.0	34.0	8.0	6.0	1.0	7.0

* Reversed item

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On the other hand, emotional over-eating subscale included four items in CEBQ. Higher score indicated that children tend to eat more when emotionally affected. About half of the parents for the both groups answered "never" for most of the items. This shows that the children would not eat more when worried, annoyed or anxious. However, when comparing the scores between the two groups, parents of OW children reported there was higher tendency for OW children to eat more when they were worried and had nothing to do compared to NW children. This was supported by higher percentage of parents answered "often" among OW children (6.0%) than NW children (2.0%).

There were three items explained the desire to drink subscale. For instance, "My child is always asking for a drink.", "If given the chance, my child would drink continuously throughout the day.", "If given the chance, my child would always be having a drink." Children had a higher desire to drink if their score was higher. Majority of the parent of OW and NW groups answered "sometimes" for all the statements. However, higher percentage of parents reported that their children always askon for sweetened drinks compared to their NW counterparts. About one in five OW children (20.0%) would like to have a drink most of the time if they were given the chance.

Satiety responsiveness subscale includes five items assessing satiety sensitivity of an individual. Higher score indicated that the children were more likely to respond towards satiety level and hence they will get full easily. There was one reversed item among the five items. For instance, "My child has a big appetite." the higher score indicated the children were able to consume a large amount of food

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because they hardly reach their satiety level. From Table 4.8, higher percentage of parent reported that OW children (21.0%) had a big appetite all the time compared to NW children (5.0%). This indicated that OW children were able to eat more food as they hardly felt full compare to their NW counterparts. All the OW children were able to finish a meal even they had a snack before the meal. About 3.0% of NW were not manage to finish their meal if they had a snack just before the meal. This shows that OW children had a bigger appetite compare to NW children.

There were four items which explained the slowness in eating subscale. Higher score indicated children had slower rates and they needed more time in eating. "My child finishes his/her meal quickly." was a reversed item which the higher scale indicated a faster eating rate. For this item, most of the parent for the both groups answered "sometimes" (OW: 42.0%; NW: 44.0%). In other words, both OW and NW children finished their meals quickly occasionally. If comparing the scores between the two groups, there was slightly higher percentage of parents for OW children (17.0%) claimed that their children never eat slowly, compared to NW children (10.0%). The results reflected that OW children had a faster eating rate compared with their NW counterparts.

There were four items which represented emotional under-eating scale. Higher score for this scale means that the children tend to eat less when they were emotionally affected. The percentages of the parents in reporting how often their children consumed less food when they were emotionally affected were quite similar. Majority of the parents for the both groups answered "sometimes" for all four items.

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OW and NW children refused to eat when they were angry, upset or tired occasionally.

Lastly, there were six items that explained food fussiness subscale. Higher score represented that the children were more likely to reject "new" food. Three reversed items were determined in food fussiness subscale. For instance, "My child enjoys tasting new foods.", "My child enjoys a wide variety of foods.", "My child is interested in tasting food she/he hasn't tasted before." Higher scores in these reversed items indicated that the children were less picky on food. For the three reversed items, results (Table 4.8) show that OW children were less picky compared to their NW counterpart. For example, higher percentage of parents for OW children claimed that their children always interested in tasting new food (OW: 20.0%; NW: 14.0%) and they were enjoyed tasting variety of foods (OW: 24.0%; NW: 17.0) compared to their NW counterparts. As overall, OW children were less likely to refuse new foods at first and eager to try variety of new foods compared to NW children.

Ho4: There are no significant differences in children's eating behaviours between OW and NW children.

Independent samples t-tests were used to compare the mean scores of subscales in CEBQ between OW and NW children. Table 4.9 shows the mean scores in CEBQ subscales (enjoyment of food, food responsiveness, emotional over-eating, desire to drink, satiety responsiveness, slowness in eating, emotional under-eating and food fussiness) between OW and NW children.

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Table 4.9: Mean scores in CEBQ subscales between OW and NW children

CEBQ subscales	OW (n=100) Mean ± SD	NW (n=100) Mean ± SD	*t*	*p*
Enjoyment of food	3.59 ± 0.78	3.22 ± 0.66	3.641	0.001*
Food responsiveness	2.42 ± 0.94	2.09 ± 0.69	2.821	0.005*
Emotional over-eating	2.08 ± 0.82	1.85 ± 0.72	2.158	0.032*
Desire to drink	2.87 ± 0.79	2.81 ± 0.74	0.556	0.579
Satiety responsiveness	2.36 ± 0.52	2.76 ± 0.59	-4.966	0.001*
Slowness in eating	2.53 ± 0.65	2.58 ± 0.70	-0.522	0.603
Emotional under-eating	2.59 ± 0.73	2.58 ± 0.65	0.153	0.878
Food fussiness	2.46 ± 0.55	2.67 ± 0.54	-2.795	0.006*

*p<0.05 (Independent *t*-test)

For enjoyment of food subscale, significant differences were found in the mean scores between the two groups (t= 3.641, p < 0.05). Higher mean score was found among OW children (3.59 ± 0.78) compared to NW children (3.22 ± 0.66). This indicated that OW children had higher enjoyment on food than their NW counterparts. This result was consistent with previous studies which suggested that overweight children have stronger responses to food cues than normal weight children (Svensson et al., 2008; Viana, Sinde, & Saxton, 2008). OW children love food and especially enjoyed when eating (Carnell & Wardle, 2008). They found that foods were more reinforcing and looking forward for mealtimes compared to NW children. This may lead to higher food intakes and increased in body weight among OW children (Svensson et al., 2008).

From Table 4.9, OW children had a higher mean score (2.42 ± 0.94) than NW children (2.09 ± 0.69) in food responsiveness subscale. The mean difference in the mean scores for both groups were significant (t= 2.821, p < 0.05). Food responsiveness assessed the tendency of a child to eat when stimulated by external

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cues which has been associated with higher adiposity (Carnell & Wardle, 2007). From Table 4.9, result shows that OW children were more responsive towards food compared to their NW counterparts. This finding was consistent with previous studies (Jansen et al., 2012; Viana et al., 2008). Jansen and colleagues reported that children with high level of food responsiveness tend to have a higher BMI (Jansen et al., 2012). In other words, children who were eat more in respond to food cues and often asked for food even if they were full had a higher tendency to overeat (Webber et al., 2009). This resulted in higher risk of developing childhood overweight or obesity than children with low level of food responsiveness.

Significant difference was found in the mean scores of emotional over-eating between OW and NW children ($t = 2.158$, $p < 0.05$). The mean scores for OW children were higher (2.08 ± 0.82) than NW children (1.85 ± 0.72). Emotional overeating (EOE), or eating in response to a range of negative emotion, has been identified as an "obesogenic" trait that contributes to weight gain or obesity in children (Croker, Cooke, & Wardle, 2011). In present study, result shows that OW children were more likely to eat more food in response to a range of negative emotions, such as anger and anxiety compare with NW children. This result was consistent with previous studies (Lumeng et al., 2013; Viana et al., 2008). Children who were overweight or obese were more likely to loss control and started to eat more food when they were engaged with emotional disturbances (Lumeng et al., 2013). A comparison of emotional eating among clinical samples of underweight, normal weight, overweight, and obese children indicated that emotional eating was most prevalent in the obese children (Croker et al., 2011). OW children tend to

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consume more snacks when they have nothing to do which this predicted a greater likelihood of being overweight.

Additionally, the mean score in satiety responsiveness subscale for OW children (2.36 ± 0.52) was lower than the mean score for NW children (2.76 ± 0.59). Significant difference was found in the mean scores between the two groups (t= -4.966, $p < 0.05$). Satiety responsiveness (SR) has been hypothesised to be low in obese individuals (Carnell & Wardle, 2007), which leading them fail in regulating their energy intake and consequently to overeat. Result shows that OW children had lower response towards satiety level compared to NW children. The finding was consistent with previous literature (Jansen et al., 2012; Viana et al., 2008). Eating in the absence of hunger (EAH) is the indicator of low satiety responsiveness, and OW children displayed greater EAH (Fisher et al., 2007). OW children were less sensitive to satiety cues which they hardly feel full after a meal compared to NW children, so they would continue to eat until they feel full. Therefore, there was a high tendency for the children to overeat that can lead to a raise in body weight (Jansen et al., 2012).

OW children had significantly lower mean score (2.46 ± 0.55) in food fussiness subscale than NW children (2.67 ± 0.54). The significant difference in the mean score was significant (t= -2.795, $p < 0.05$). This indicated that OW children were less picky on food than their NW counterparts. The finding was supported by previous literature (Jansen et al., 2012; Wardle et al., 2001). The tendency for heavier children to reject food which was 'new' to them was lower as compared to thinner children (Sleddens et al., 2008). A comparison study among 406 samples of underweight, healthy weight, overweight and obese groups aged 7-12 years old

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reported that fussiness about food was negatively associated with children's body weight status (Webber et al., 2009). In other words, OW children were less picky on food than NW children. They tend to eat all food that served to them even if they did not taste it before; therefore there was a high tendency for them to overeat (Viana et al., 2008).

For desire to drink subscale, no significant differences were found in the mean scores between the two groups ($t= 0.556$, $p>0.05$). Both OW (2.87 ± 0.79) and NW children (2.81 ± 0.74) had almost similar desire to drink. The finding from this study was consistent with previous studies (Sleddens et al., 2008; Viana et al., 2008). Jansen and colleagues found that desire to drink in children was not significantly associated with children's BMI. OW and NW children had the similar desire to have drinks, usually sugar-sweetened drinks to carry around with them (Sleddens et al., 2008). A study carried out in Philadelphia examined the differences in sucrose and fat preferences between children and their mothers found that children preferred higher sugar concentrations but lower fat concentrations in puddings than their mothers (Mennella, Finkbeiner, & Reed, 2012). This indicated that it is the nature of children to prefer sweet food than adults regardless their body weight status.

Higher score on the scale slowness in eating is characterised by a reduction in eating rate. Meanwhile, no significant differences were found in the mean scores of slowness in eating subscale between two groups ($t= -0.522$, $p > 0.05$). Both OW (2.53 ± 0.65) and NW children (2.58 ± 0.70) had the similar eating rate. This result was similar with previous study (Viana et al., 2008). Children were easily influenced by environmental factors especially when TV is on which can lead to reduction in

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eating rate. However, this finding was not supported in another study (Sleddens et al., 2008). Compared to their leaner counterparts, overweight children have an increased consumption and have less reduction of their eating rate during the end of a meal (Sleddens et al., 2008).

For emotional under-eating subscale, no significant difference was found in the mean score between two groups ($t= 0.153$, $p > 0.05$). Both groups showed almost the similar mean score (OW: 2.59 ± 0.73; NW: 2.58 ± 0.65). The eating desire in term of under-eating for OW and NW children were almost similar in response to some negative emotions, such as anger and anxiety (Viana et al., 2008). The finding was similar with previous study (Webber et al., 2009).

In short, there were significant differences in the mean scores of subscales of enjoyment of food ($t = 3.641$, $p < 0.05$), food responsiveness ($t = 2.821$, $p < 0.05$), emotional over-eating ($t = 2.158$, $p < 0.05$), satiety responsiveness ($t = -4.966$, $p < 0.05$) and food fussiness ($t = -2.795$, $p < 0.05$) between two groups. OW children were more enjoyed when eating, more responsive towards food cues, such as hunger, eat more food when emotionally affected, less likely to feel full after eating, and less picky on food than their NW counterparts. No significant differences were found in the subscales of desire to drink ($t = 0.556$, $p > 0.05$), slowness in eating ($t =-0.522$, $p > 0.05$), and emotional under-eating ($t = 0.153$, $p > 0.05$) between the two groups. OW and NW children had almost similar desire to have drinks with them, similar eating rate, and similar eating desire in term of eating less food in response with a range of negative emotions, such as anger or depression.

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CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Obesity is defined as abnormal or excessive fat accumulation in the body that may impair health. According to the WHO, the global prevalence of overweight and obesity have nearly doubled since 1980. Over-nutrition is linked to more deaths than underweight. At least 2.6 million people each year die as a result of being overweight or obese. Worldwide prevalence of childhood obesity continues to rise over the past three decades. In 2012, more than 40 million children were overweight or obese.

Parental influences including body weight status of parents, parental beliefs, attitudes and feeding practices as well as children's eating behaviours were the independent variables in this present study. This is because parents play an important role in feeding children at early childhood age as they are the key person in shaping children's eating behaviours. So how they feed their children will affect children's eating behaviours and predict their body weight in later life. Eating behaviours may be varying among each child where this will eventually linked with their body weight status. Physiologic cues among children such as hunger and satiation during feeding had been identified as important factors on obesity prevention.

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This cross-sectional comparative study aimed to compare the parental beliefs, attitudes and feeding practices and children's eating behaviours between overweight/obese (OW) and normal weight (NW) Standard four and five primary school children in Puchong, Selangor. This study is important for the nation to get a clearer picture on how these variables will affect children's body weight status and to improve the nutritional status of children in local context.

Four National Primary Schools in Puchong were randomly selected. There were two phases in this study. The purposes of Phase I of the study were to determine the socio-demographic characteristics and body weight status of the children based on WHO Growth Reference 2007. During Phase I of the study, a total of 384 Standard four and five children were participated in this study. Body weight and height were measured and BMI-for-age was used to determine their body weight status. About half of the children were boys (47.4%) while another half were girls (52.6%). The mean age of the children was 11.10 ± 0.53 years whereby more than half of them were 11 years old (72.9%). Majority of the children were Malay (88.3%) followed by Indian (8.1%) and Chinese (2.9%).

Based on their body weight status, 100 overweight or obese (OW) children were matched with 100 normal weight (NW) children based on matching criteria, namely sex, age and ethnicity. Their parents were recruited as the study subjects for Phase II of the study (n=200). The purpose of Phase II of the study was to compare the body weight status of parents, parental beliefs, attitudes and feeding practices and children's eating behaviours between OW and NW children. Mean age of children (n=200) was 11.13±0.52 years which comprised 188 (94.0%) Malay, 4 (2.0%)

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Chinese and 8 (4.0%) Indian, respectively. Child Feeding Questionnaire (CFQ) and Children's Eating Behaviours Questionnaire (CEBQ) were brought back by the children to be completed by their parents. CFQ was used to assess parental beliefs, attitudes and feeding practices while CEBQ was used to assess children's eating styles.

From Phase I finding, the prevalence of childhood overweight and obesity (35.6%) was three times higher than thinness (11.7%) among Standard four and five primary school children in Puchong, Selangor. In other words, about one in three children was either overweight or obese and one in ten was underweight. From Phase II findings, in terms of parents' BMI, no significant difference was found in paternal BMI between OW and NW children (OW: 27.08 ± 4.80 kgm^{-2}; NW: 26.54 ± 4.14 kgm^{-2}, t=1.970; p>0.05). However, significant difference was found in maternal BMI between two groups. Maternal BMI was higher among OW children than their NW counterparts (OW: 27.78 ± 5.52kgm^{-2}; NW: 24.38 ± 3.58kgm^{-2}, t=4.388, p<0.05).

Significant differences were found in perceived child weight (OW:3.03±0.43; NW:2.86±0.38, t=3.052, p<0.05), pressure to eat (OW:3.62±0.74; NW:3.99±0.84, t=-3.310, p<0.05), enjoyment of food (OW: 3.59 ± 0.78; NW: 3.22 ± 0.66, t=3.641, p<0.05), food responsiveness (OW: 2.42±0.94; NW: 2.09 ± 0.69, t=2.821, p<0.05), emotional over-eating (OW: 2.08 ± 0.82; NW: 1.85 ± 0.72, t=2.158, p<0.05), satiety responsiveness (OW: 2.36 ± 0.52; NW: 2.76 ± 0.59, t= -4.966, p<0.05) and food fussiness (OW: 2.46 ± 0.5; NW: 2.67±0.54, t= -2.795, p<0.05) between OW and NW groups. OW children had higher mean scores in perceived child weight factor, enjoyment of food, food responsiveness and emotional over-eating subscales but

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lower mean scores in pressure to eat factor, satiety responsiveness and food fussiness. This indicated that parents of OW children were able to perceive their child as overweight compared to parents of NW children. They also tend to give less pressure to eat on OW children compare to NW children. OW children were more enjoy when eating, more likely to respond to food and often asked for food, tends to eat more in response to a range of negative emotions, such as anger and anxiety, hardly reach satiety level and less picky on food compared to their NW counterparts.

Meanwhile, no significant differences were found in perceived responsibility ($t = 0.546$, $p > 0.05$), concern about child weight ($t = -1.666$, $p > 0.05$), monitoring ($t = -0.726$, $p > 0.05$), restriction ($t = 1.489$, $p > 0.05$), desire to drink ($t = 0.556$, $p > 0.05$), slowness in eating ($t = -0.522$, $p > 0.05$), and emotional under-eating ($t = 0.153$, $p > 0.05$) between the two groups. These results indicated parents for both OW and NW groups had the similar responsibility level, concern level, monitoring level and restriction on food in feeding their children. OW and NW children had the similar desire on sweetened drinks, eating rate and eating desire in term of under-eating when emotionally affected.

5.2 Limitation and recommendations

There were several limitations in this study that should be considered when interpret the findings. First of all, the design of cross-sectional comparative study was unable to suggest for causal relationships between parents' BMI, parental beliefs, attitudes, and feeding practices, children's eating behaviours and children's body weight status. Bi-directional influences are most likely to influence children's body weight status. But, the reverse are also true where parental beliefs, attitudes, feeding

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practices and children's eating behaviours are also influenced by children's body weight status. Therefore, future research should focus on cohort or experimental studies in order to rule out the causal effects of parental feeding practices and eating behaviours in the development of obesity in children.

Next, cooperation from parents was one of the most challenging part in this study. Most of them were unwilling to participate in this study when information sheets and consent forms were distributed before data collection. This revealed a low response rate from parents (64%). Some of the parents only completed few parts in the questionnaires with some missing data on socio-demographic characteristics such as parental monthly income, body weight and height. They may feel these informations were private and confidential, so they refused to report in the questionnaire. Other than that, self-administered questionnaires were used in this present study whereby the results were highly relied on the honesty and understanding of the parents in answering the questionnaire.

In order to attract more parents to participate in future studies, researchers can negotiate with the principal when they approach the schools. They can ask the principal to inform all the teachers, parents as well as the students about the research and emphasis on the importance of parents involvement in the research. Researchers can also try to get parents to be attended to school during data collection day. To prevent drop out, researchers may also include some tokens for parents as their reward in participating such as a small goodies bag instead of giving pamphlets in present study.

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Besides that, the two questionnaires used in this study: Child Feeding Questionnaire (CFQ) which used to assess the parental beliefs, attitudes and feeding practices, and Children's Eating Behaviours Questionnaire (CEBQ) which used to assess children's eating behaviours were not validated in Malaysia yet. Additionally, pre-testing on parents was not conducted prior data collection due to time contraints. However, few local studies were using these questionnaires and the studies had been published. This indicated that the questionnaires had been pre-tested and were suitable for Malaysian children. Hence, the results obtained from this study were reliable and accurate.

Another limitation was majority of the children and parents recruited in this study were Malays, only small percentages of them were Chinese or Indian. So, the findings cannot represent the multiracial Standard four and five primary school children in whole Malaysia. For recommendation, future studies should include Chinese and Tamil National Primary Schools instead of only National Primary School in order to get multiracial children. A nation wide study involving children from all types of primary schools in every state should be carried out. So that the study findings will be more conclusive and precisely represent the relationship between children' body weight status and parents' BMI, parental beliefs, attitudes, feeding practices and as well as children's eating behaviours. Besides, the findings also can be generalized to all the primary school children in Malaysia.

Lastly, other variables such as genetics, psychological and environmental factors should also be studied in order to provide a more comprehensive picture on the major factors that contribute to childhood obesity. Other than recommendations

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for future studies, there are also some recommendations for future health intervention programs. Health care professionals should implement programs for parents on understanding their children's eating behaviours and promoting healthy eating behaviours at early age. Programs should also educate parents on the ways to feed their children and correct any inappropriate perception on body weight. These programs are imperative to overcome childhood obesity problem.

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APPENDICES

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APPENDIX A

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APPENDIX B

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Attachment 2

JKEUPM Ref No. : FPSK_Oktober(13)17

a) Members of the JKEUPM who reviewed the documents:
   - Prof. Dr. Tengku Aizan Abd Hamid

b) Date of approval: 8/11/2013

Endorsed at JKEUPM Meeting on **6/12/2013**, attended by:

NAME	DESIGNATION	GENDER	TICK IF PRESENT
Prof. Dr. Norlijah Othman	Paediatrics& Dean, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr Zamberi Sekawi	Medical Microbiologist & Deputy Dean of Research and Internationalization, Faculty of Medicine and Health Sciences	Male	
Prof. Dato' Dr. Lye Munn Sann	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Tengku Aizan Abd Hamid	Gerontologist & Director, Institute of Gerontology	Female	
Prof. Dr. Lekhraj Rampal	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Elizabeth George	Pathologist, Dept of Pathology, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Lim Thiam Aun	Anesthesiologist, Dept of Surgery, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Wan Omar Abdullah	Medical Parasitologist, Dept of Medical Microbiology and Parasitology, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Patimah Ismail	Professor of Biomedicine, Dept of Biomedical Sciences, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Johnson Stanslas	Pharmacologist, Dept of Medicine, Faculty of Medicine and Health Sciences	Male	√
Assoc. Prof. Dr. Mansor Abu Talib	Assoc. Professor of Guidance and Counselling, Dept of Human Development and Family Studies, Faculty of Human Ecology	Male	
Assoc. Prof. Dr. Azmawani Abd. Rahman	Operations and Technology Management / Deputy Dean of Research and Graduate Studies	Female	
Assoc. Prof. Dr. Noritah Omar (Lay Person)	Assoc. Professor of English Language, Dept of English Language, Faculty of Communication and Modern Languages	Female	
Dr. Rojanah Kahar (Lay Person)	Senior Lecturer of Dept of Human Development and Family Studies, Faculty of Human Ecology	Female	√
Tan Sri Dato' Napsiah Omar (Independent Member)	Chairman, National Population and Family Development Board	Female	

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

FORM B1: RESPONDENT'S INFORMATION SHEET AND CONSENT

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. **STUDY TITLE:**

   Comparison of parental feeding practices and child eating behaviors between overweight and normal weight primary school children aged 10-11 in Puchong, Selangor.

2. **INTRODUCTION:**

   This study will compare the parental feeding practices and child eating behaviors between overweight and normal weight primary school children. All the related information gathered will be able to determine the relationships between parental feeding practices and child eating behaviors with child' body weight status among primary school children.

3. **WHAT WILL YOU HAVE TO DO?**

   You will be required to complete a set questionnaire which includes information regarding socio-demographic characteristics. Additionally, your body weight and height will be measured and recorded to calculate your BMI.

4. **WHO SHOULD NOT PARTICIPATE IN THE STUDY?**

   Children with mentally disability or chronic disease; Children who absent on the data collection day; Children aged below 10 or above 11.

5. **WHAT WILL BE THE BENEFITS OF THE STUDY:**

   (a) TO YOU AS THE SUBJECT?

   You will know your body weight status after participation. Therefore, you can modify your dietary and lifestyle practices to improve your body weight status or maintain your healthy lifestyles.

   (b) TO THE INVESTIGATOR?

   Information obtained can be used by researchers and healthcare professional to organize more effective programs to educate parents and children on healthy feedings and eating behaviors to improve child's body weight status.

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6. WHAT ARE THE POSSIBLE RISKS?

This study will not impose any risks as what you have to do are to complete a set of questionnaire and measure your body weight and height.

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

All the information gathered will be kept confidentially. No individual description will be made at any part of research or publication.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

If you have any enquiry about this study, you can direct contact Ms Chong Wei Gin, 016-3450502 or email to weigin92@hotmail.my or the researcher's supervisor:

Dr. Chin Yit Siew
Department of Nutrition and Dietetics
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia,
43400 UPM Serdang,
Selangor Darul Ehsan.
Tel no : +603-8947 2680 (office)
+603-8942 2680 (fax)
E-mail : chinys@medic.upm.edu.my

*Please initial here if you have read and understood the contents of this page*_____

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9. CONSENT

I ..... Identity Card No. .....

address.....

.....hereby voluntarily agree to take part in the research stated above *(clinical /drug trial/video recording/ focus group/interview-based/ questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me be used in any form of publication or presentation (if applicable)

* delete where necessary

Signature ..... Signature .....
(Respondent) (Witness)

Date :..... Name :.....

I/C No. :.....

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned research.

Date ..... Signature .....
(Researcher)

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SELANGOR, MALAYSIA

BORANG B1: PENERANGAN DAN PERSETUJUAN RESPONDEN

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

1. TAJUK KAJIAN

Perbandingan amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan kanak-kanak antara kanak-kanak berlebihan berat badan dan kanak-kanak berat badan normal yang berumur 10-11 di Puchong, Selangor.

2. PENGENALAN

Kajian ini bertujuan untuk membuat perbandingan mengenai amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan kanak-kanak antara kanak-kanak sekolah rendah yang berlebihan berat badan dan berat badan normal. Segala informasi yang berkenaan akan digunakan unuk menentu hubungan antara amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan kanak-kanak dengan status berat badan kanak-kanak sekolah rendah.

3. APAKAH YANG PERLU ANDA LAKUKAN?

Anda akan ditemubual dengan menggunakan borang soal selidik untuk mendapatkan maklumat sosio-demografi. Anda juga akan diminta untuk melaporkan keberatan and ketinggian badan anda untuk pengiraan BMI anda.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Kanak-kanak yang mengalami kecacatan mental atau penyakit kronik; Kanak-kanak yang tidak hadir pada hari pengumpulan data; Kanak-kanak yang berumur di bawah 10 atau berumur 11 ke atas.

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANDA SEBAGAI PESERTA?

Anda akan mengetahui status berat badan anda selepas menyertai kajian ini. Oleh yang demikian, anda boleh mengubah cara pemakanan dan cara hidup bagi meningkatkan status berat badan anda.

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9. PERSETUJUAN

Saya..... No Kad Pengenalan. .....
beralamat.....
.....dengan ini bersetuju untuk mengambil bahagian secara sukarela dalam penyelidikan yang tersebut di atas *(kajian klinikal/percubaan ubat-ubatan/rakaman video/kumpulan sasaran/temuduga/ soal selidik).

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

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

I setuju/tidak bersetuju untuk imei/gambar/rakaman video/ rakaman suara digunakan dalam apa jua bentuk penerbitan atau pembentangan. (sekiranya berkaitan).

*potong yang tidak berkenaan

Tandatangan .....
(*Responden*)

Tarikh :.....

Tandatangan .....
(*Saksi*)

Nama :.....

No. K/P: .....

Saya mengesahkan bahawa saya telah menerangkan kepada responden ini sifat dan tujuan penyelidikan yang tersebut di atas.

Tarikh .....

Tandatangan .....
(*Penyelidik*)

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SELANGOR, MALAYSIA

FORM B2: RESPONDENT'S INFORMATION SHEET AND GUARDIAN'S/PARENT'S CONSENT

Please read the following information carefully. Do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE:

Comparison of parental feeding practices and child eating behaviors between overweight and normal weight primary school children aged 10-11 in Puchong, Selangor.

2. INTRODUCTION:

This study will compare the parental feeding practices and child eating behaviors between overweight and normal weight primary school children. All the related information gathered will be able to determine the relationships between parental feeding practices and child eating behaviors with child' body weight status among primary school children.

3. WHAT WILL YOU HAVE TO DO?

You will be required to complete a set questionnaire which includes information regarding socio-demographic characteristics, your feeding practices and your child's eating behaviors. Your child will be required to complete the questionnaire and measured their weight and height for BMI calculation.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

Children with mentally disability or chronic disease; children who absent on the data collection day and children aged below 10 or above 11 should not participate in the study.

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

You will know your child's body weight status after participation in the study. Therefore, you can modify their dietary and lifestyle practices to improve their body weight status.

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9. GUARDIAN'S/PARENT'S CONSENT

I ..... Identity Card No. .....
address.....
.....hereby voluntarily agree to allow my *son / daughter / ward..... to take part in the research by using questionnaire as stated above.

I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that my *son / daughter / ward has the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to the identity of my* son / daughter / ward will remain private and confidential.

I* wish / do not wish to know the results related to my my *son's / daughter's / ward's participation in the research

* delete where necessary

Signature .....
(*Parent/Guardian*)

Date :.....

Signature .....
(*Witness*)

Name :.....

I/C No. :.....

I confirm that I have explained to the respondent's parent/guardian the nature and purpose of the above-mentioned research.

Date .....

Signature .....
(*Researcher*)

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SELANGOR, MALAYSIA

BORANG B2: PENERANGAN DAN PERSETUJUAN IBUBAPA/PENJAGA

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

1.TAJUK KAJIAN

Perbandingan amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan kanak-kanak antara kanak-kanak berlebihan berat badan dan kanak-kanak berat badan normal yang berumur 10-11 di Puchong, Selangor.

2. PENGENALAN

Kajian ini bertujuan untuk membuat perbandingan mengenai amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan kanak-kanak antara kanak-kanak sekolah rendah yang berlebihan berat badan dan berat badan normal. Segala informasi yang berkenaan akan digunakan unuk menentu hubungan antara amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan kanak-kanak dengan status berat badan kanak-kanak sekolah rendah.

3. APAKAH YANG PERLU ANDA LAKUKAN?

Anda akan diberikan borang soal selidik untuk mendapatkan maklumat mengenai amalan pemberian makanan ibu bapa kepada anak dan tingkah laku makan anak anda. Anak anda juga akan diberikan borang soal selidik dan maklumat penting seperti berat badan dan tinggi anak anda akan direkodkan bagi tujuan pengiraan BMI.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Kanak-kanak yang berumur di bawah 10 atau berumur 11 ke atas, mengalami kecacatan mental atau menghidap penyakit kronik tidak boleh menyertai kajian ini. Selain itu, kanak-kanak yang tidak hadir pada hari pengumpulan data juga dikecualikan daripada kajian ini.

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANAK/JAGAAN SAYA SEBAGAI PESERTA?

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9. Persetujuan

Saya..... No Kad Pengenalan. .....

beralamat..... .....

.....dengan ini secara sukarela bersetuju membenarkan *anak / jagaan saya

..... menyertai penyelidikan berasaskan borang soal selidik tersebut di atas.

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

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

*potong yang tidak berkenaan

Tandatangan ..... Tandatangan .....

(*Ibubapa/ Penjaga*) (*Saksi*)

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

No. K/P: .....

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

Tarikh ..... Tandatangan .....

(*Penyelidik*)

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APPENDIX F

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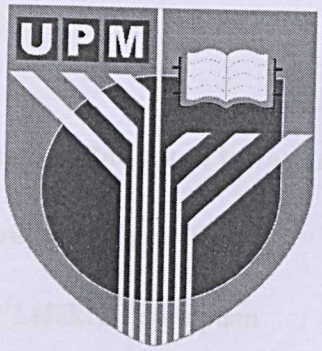

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UNIVERSITI PUTRA MALAYSIA

BERILMU BERBAKTI

FAKULTI PERUBATAN DAN SAINS KESIHATAN

UNIVERSITI PUTRA MALAYSIA

JABATAN PEMAKANAN & DIETETIK

SARINGAN KESIHATAN

PENYELIDIK : **Chong Wei Gin**

KURSUS : **BACHELOR SAINS DIETETIK**

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No rujukan:_____

Arahan: Sila nyatakan dan bulatkan jawapan anda.

Bahagian A: Butiran- butiran responden

1. Jantina : Lelaki / Perempuan

2. Tarikh lahir : _____(hh/bb/thn)

3. Etnik:

a) Melayu

b) Cina

c) India

d) Lain-lain (sila nyatakan) : _____

Bahagian B :Ukuran antropometrik **(Untuk diisi oleh PENYELIDIK sahaja)**

Bacaan	Tinggi (cm)	Berat badan(kg)
1		
2		
Purata		

Index Jisim Tubuh (IJT)

Klasifikasi IJT untuk umur:

- ☐ Kekurangan berat badan
- ☐ Berat badan normal
- ☐ Berlebihan berat badan
- ☐ Obes

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APPENDIX G

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BORANG SOAL SELIDIK – SET IBUBAPA

Questionnaire – Parents' set

Arahan:

Instructions:

1. Sila jawab semua soalan di dalam borang ini. Kejujuran anda dalam menjawab soal selidik ini amat diharapkan.

1. Please answer all questions in this form. Your honesty in answering this questionnaire is very reliable.

2. Sila rujuk penyelidik untuk sebarang pertanyaan.

2. Please refer to the researcher for any questions.

3. Segala maklumat yang diberikan adalah sulit dan hanya untuk tujuan penyelidikan sahaja.

3. All the information given will remain confidential and only for research purposes.

Segala kerjasama anda amat dihargai dan didahulukan dengan ucapan terima kasih

Your cooperation is highly appreciated. Thank you.

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Bahagian A : Sila isi atau tanda pernyataan berkenaan
Section A : Please fill in the form.

1. Jantina : ○Lelaki ○ Perempuan
1. Gender : ○Male ○ Female

2. Hubungan dengan pelajar : ○Bapa ○Ibu ○ Penjaga (sila nyatakan:.....)
2. Relationship with student : ○Father ○Mother ○Guardian (please state:.....)

3. Kumpulan etnik/bangsa :○Melayu ○Cina ○India ○Lain-lain(nyatakan:.....)
3. Ethnicity/race : ○Malay ○Chinese ○Indian ○Others(please state :.....)

4. Taraf perkahwinan : ○ Berkahwin ○Bercerai ○ Lain- lain(nyatakan:.....)
4. Marital status :○Married ○Divorced ○Others(please state :.....)

5. Tarihk lahir (hari/ bulan/ tahun) : ☐☐ / ☐☐ / ☐☐☐☐
5. Date of birth : ☐☐ / ☐☐ / ☐☐☐☐

4. Latar belakang sosio-demografi :
4. Socio-demographic background :

	Bapa *(Father)*	Ibu *(Mother)*
a) Taraf pendidikan *a) Educational level*	O Tiada bersekolah formal *(No formal schooling)* O Sekolah rendah (UPSR) O Sekolah Menengah Bawah (PMR)/SRP O Sekolah Menengah Atas (SPM)/ MCE O Pre-Universiti (STPM/ Diploma/ *A level)* O Bachelor Muda *(Bachelor /Degree)* O Ph D/ Sarjana *(Master)*	O Tiada bersekolah formal *(No formal schooling)* O Sekolah rendah (UPSR) O Sekolah Menengah Bawah (PMR)/SRP O Sekolah Menengah Atas (SPM)/ MCE O Pre-Universiti (STPM/ Diploma/ *A level)* O Bachelor Muda *(Bachelor /Degree)* O Ph D/ Sarjana *(Master)*
b) Perkerjaan *b) Occupation*		
c) Pendapatan Sebulan (RM) *c) Monthly income (RM)*		
d) Berat badan (kg) *d) Body weight (kg)*		
e) Ketinggian (cm) *e) Height (cm)*		

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Bahagian B: Pemberian Makanan kepada Anak
Section B: Child Feeding Practices

Sila bulatkan **satu nombor** yang paling sesuai bagi setiap kenyataan yang berikut.
*Please answer all the questions below and circle **only one** relevant number.*

i) Tanggapan terhadap berat badan anak
i) Perceived child weight

1=ketara kurang berat badan *1=markedly underweight*	2=kurang berat badan *2=underweight*	3=normal *3=normal*	4= berat badan berlebihan *4=overweight*	5=ketara berat badan berlebihan *5= markedly overweight*

No	Kenyataan / *Statement*	Skala / *Scale*
1.	Apakah tanggapan anda terhadap berat badan anak anda semasa tahun pertama kelahirnya? *What is your perception towards your child's body weight during the first year of life?*	1 2 3 4 5
2.	Apakah tanggapan anda terhadap berat badan anak anda semasa dia berumur 1-3 tahun? *What is your perception towards your child's body weight when your child is 1-3 years old?*	1 2 3 4 5
3.	Apakah tanggapan anda terhadap berat badan anak anda semasa dia berumur 4-6 tahun? *What is your perception towards your child's body weight when your child is 4-6 years old?*	1 2 3 4 5

ii) Keprihatinan terhadap berat anak
ii) Concern about child weight

1=tidak prihatin *1=unconcerned*	2=kurang prihatin *2=a little concerned*	3=prihatin *3=concerned*	4=agak prihatin *4=fairly concerned*	5=sangat prihatin *5=very concerned*

No	Kenyataan / *Statement*	Skala / *Scale*
1.	Bagaimana prihatinkah anda terhadap anak anda jika dia makan terlalu banyak apabila anda tidak bersamanya? *How concerned are you about your child eating too much when you are not around her?*	1 2 3 4 5
2.	Bagaimana prihatinkah anda terhadap anak anda perlunya untuk berdiet agar berat badannya berada dalam keadaan yang memuaskan? *How concerned are you about your child having to diet to maintain a desirable weight?*	1 2 3 4 5
3.	Bagaimana prihatinkah anda terhadap anak anda jika dia mempunyai berat badan yang berlebihan? *How concerned are you about your child becoming overweight?*	1 2 3 4 5

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iii) Tanggapan tanggungjawab terhadap pemakanan anak

iii) Perceived responsibility

1=tidak pernah *1=never*	2=jarang *2=seldom*	3=kadang-kadang *3=sometimes*	4=kerap *4=mostly*	5=selalu *5=always*

No	Kenyataan / *Statement*	Skala / *Scale*
1.	Berapa kerapkah anda memberikan sendiri makanan kepada anak anda semasa dia berada di rumah? *When your child is at home, how often are you responsible for feeding her?*	1 2 3 4 5
2.	Berapa kerapkah anda bertanggungjawab untuk menentukan sendiri saiz hidangan anak anda? *How often are you responsible for deciding what your child's portion sizes are?*	1 2 3 4 5
3.	Berapa kerapkah anda bertanggungjawab untuk menentukan sendiri makanan yang sesuai untuk dimakan oleh anak anda? *How often are you responsible for deciding if your child has eaten the right kind of foods?*	1 2 3 4 5

iv) Pemantauan terhadap pemakanan anak

iv) Monitoring to eat

1=tidak pernah *1=never*	2=jarang *2=seldom*	3=kadang-kadang *3=sometimes*	4=kerap *4=mostly*	5=selalu *5=always*

No	Kenyataan / *Statement*	Skala / *Scale*
1.	Berapa kerapkah anda memantau pengambilan makanan manis (gula-gula,aiskrim,kek atau pastry) oleh anak anda? *How much do you keep track of the sweets (candy, ice cream cake, pies, pastries) that your child eats?*	1 2 3 4 5
2.	Berapa kerapkah anda memantau pengambilan makanan snek (kerepek kentang) oleh anak anda? *How much do you keep track of the snack food (potato chips, cheese puffs) that your child eats?*	1 2 3 4 5
3.	Berapa kerapkah anda memantau pengambilan makanan yang tinggi kandungan lemak oleh anak anda? *How much do you keep track of the high-fat foods that your child eats?*	1 2 3 4 5

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v) Larangan terhadap pemakanan anak

v) Restriction to eat

1=tidak setuju *1=disagree*	2=kurang bersetuju *2=slightly disagree*	3=neutral *3=neutral*	4=agak bersetuju *4=slightly agree*	5=setuju *5=agree*

No *No*	Kenyataan *Statement*	Skala *Scale*
1.	Saya perlu memastikan bahawa anak saya tidak makan terlalu banyak makanan yang manis (gula-gula,aiskrim,kek atau pastry) oleh anak anda. *I have to be sure that my child does not eat too many sweets (candy, icecream, cake or pastries).*	1 2 3 4 5
2.	Saya perlu memastikan bahawa anak saya tidak makan terlalu banyak makanan yang tinggi kandungan lemak. *I have to be sure that my child does not eat too many high-fat foods.*	1 2 3 4 5
3.	Saya perlu memastikan bahawa anak saya tidak makan terlalu banyak makanan kegemarannya. *I have to be sure that my child does not eat too much of her favorite foods.*	1 2 3 4 5
4.	Saya sengaja menjauhkan sesetengah makanan dari jangkauan anak saya. *I intentionally keep some foods out of my child's reach.*	1 2 3 4 5
5.	Saya memberikan anak saya makanan yang manis (gula-gula,aiskrim,kek atau pastry) kerana dia berkelakuan baik. *I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior.*	1 2 3 4 5
6.	Saya memberikan anak saya makanan kegemarannya supaya dia berkelakuan baik. *I offer my child her favorite foods in exchange for good behavior.*	1 2 3 4 5
7.	Jika saya tidak mengawal pemakanan anak saya, dia akan makan terlalu banyak makanan ringan. *If I did not guide or regulate my child's eating, she would eat too many junk foods.*	1 2 3 4 5
8.	Jika saya tidak mengawal pemakanan anak saya, dia akan makan terlalu banyak makanan kegemarannya. *If I did not guide or regulate my child's eating, she would eat too much of her favorite foods.*	1 2 3 4 5

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vi) Paksaan untuk makan
vi) Pressure to eat

1=tidak setuju *1=disagree*	2=kurang bersetuju *2=slightly disagree*	3=neutral *3=neutral*	4=agak bersetuju *4=slightly agree*	5=setuju *5=agree*

No *No*	Kenyataan *Statement*	Skala *Scale*
1.	Anak saya harus sentiasa menghabiskan makanan yang terdapat di dalam pinggannya. *My child should always eat all of the food on her plate.*	1 2 3 4 5
2.	Saya perlu berhati-hati untuk memastikan anak saya makan dengan secukupnya. *I have to be especially careful to make sure my child eats enough.*	1 2 3 4 5
3.	Jika anak saya mengatakan dia tidak lapar, saya tetap akan cuba untuk memastikan dia makan. *If my child says ``I'm not hungry'', I try to get her to eat anyway.*	1 2 3 4 5
4.	Jika saya tidak mengawal pemakanan anak saya, dia akan makan kurang daripada yang sepatutnya. *If I did not guide or regulate my child's eating, she would eat much less than she should.*	1 2 3 4 5

Bahagian C: Tabiat Pemakanan Kanak-kanak
Section C: Children's Eating Behaviours

Sila baca kenyataan di bawah dan tandakan **satu sahaja** kotak yang paling sesuai dengan tabiat pamakanan anak anda.
*Please read the following statements and tick the boxes **most appropriate** to your child's eating behaviors.*

No *No*	Kenyataan *Statement*	Tidak Pernah *Never*	Jarang *Rarely*	Kadang-kadang *Sometimes*	Kerap *Often*	Selalu *Always*
1.	Anak saya suka makan. *My child loves food.*	1	2	3	4	5
2.	Anak saya akan makan lebih jika dia berasa risau. *My child eats more when worried.*	1	2	3	4	5
3.	Anak saya mempunyai selera yang besar. *My child has a big appetite.*	1	2	3	4	5

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4.	Anak saya menghabiskan makanannya dengan cepat. *My child finishes his/her meal quickly.*	1	2	3	4	5
5.	Anak saya berminat dengan makanan. *My child is interested in food.*	1	2	3	4	5
6.	Anak saya selalu meminta diberikan minuman. *My child is always asking for a drink.*	1	2	3	4	5
7.	Anak saya tidak suka kepada makanan yang baru. *My child refuses new foods at first.*	1	2	3	4	5
8.	Anak saya makan dengan lambat. *My child eats slowly.*	1	2	3	4	5
9.	Anak saya makan sedikit bila berasa marah. *My child eats less when angry.*	1	2	3	4	5
10.	Anak saya seronok menikmati makanan baru. *My child enjoys tasting new foods.*	1	2	3	4	5
11.	Anak saya makan sedikit apabila berasa penat. *My child eats less when she/he is tired.*	1	2	3	4	5
12.	Anak saya kerap meminta makanan. *My child is always asking for food.*	1	2	3	4	5
13.	Anak saya makan lebih bila berasa marah. *My child eats more when annoyed.*	1	2	3	4	5
14.	Jika dibenarkan, anak saya akan makan terlalu banyak. *If allowed to, my child would eat too much.*	1	2	3	4	5
15.	Anak saya makan lebih bila berasa cemas. *My child eats more when anxious.*	1	2	3	4	5
16.	Anak saya berasa seronok dengan adanya makanan yang pelbagai.	1	2	3	4	5

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	My child enjoys a wide variety of foods.					
17.	Terdapat lebihan makanan dalam pinggan anak saya selepas makan. *My child leaves food on his/her plate at the end of a meal.*	1	2	3	4	5
18.	Anak saya mengambil masa lebih 30 minits untuk habis makan. *My child takes more than 30 minutes to finish a meal.*	1	2	3	4	5
19.	Jika diberi pilihan, anak saya akan makan sepanjang masa. *Given the choice, my child would eat most of the time.*	1	2	3	4	5
20.	Anak saya suka menunggu waktu makan. *My child looks forward to mealtimes.*	1	2	3	4	5
21.	Anak saya akan kenyang sebelum makananya habis. *My child gets full before his/her meal is finished.*	1	2	3	4	5
22.	Anak saya gembira sewaktu makan. *My child enjoys eating.*	1	2	3	4	5
23.	Anak saya makan banyak bila dia berasa gembira. *My child eats more when she/he is happy.*	1	2	3	4	5
24.	Anak saya sukar untuk diajak makan. *My child is difficult to please with meals.*	1	2	3	4	5
25.	Anak saya makan sedikit bila dia berasa sedih. *My child eats less when upset.*	1	2	3	4	5
26.	Anak saya cepat dan mudah kenyang. *My child gets full up easily.*	1	2	3	4	5
27.	Anak saya makan dengan banyak bila dia tiada perkara yang peril dibuat. *My child eats more when she/he has nothing else to do.*	1	2	3	4	5

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28.	Walaupun anak saya masih kenyang, dia akan mencari ruangan untuk makan makanan kegemarannya. *Even if my child is full up she/he finds room to eat his/her favourite food.*	1	2	3	4	5
29.	Jika diberi pilihan, anak saya akan minum secara berterusan sepanjang hari. *If given the chance, my child would drink continuously throughout the day.*	1	2	3	4	5
30.	Anak saya tidak boleh makan jika dia sudah mengambil snek sebelumnya. *My child cannot eat a meal if she/he has had a snack just before.*	1	2	3	4	5
31.	Jika diberi pilihan, anak saya akan sentiasa membawa minuman. *If given the chance, my child would always be having a drink.*	1	2	3	4	5
32.	Anak saya suka merasa makanan yang tidak pernah diambil sebelum ini. *My child is interested in tasting food she/he hasn't tasted before.*	1	2	3	4	5
33.	Anak saya tidak suka makan walaupun tanpa merasanya terlebih dahulu. *My child decides that she/he doesn't like a food, even without tasting it.*	1	2	3	4	5
34.	Jika diberi pilihan, anak saya akan sentiasa mempunyai makanan di dalam mulutnya. *If given the chance, my child would always have food in his/her mouth.*	1	2	3	4	5
35.	Anak saya makan banyak dan lebih perlahan semasa makan. *My child eats more and more slowly during the course of a meal.*	1	2	3	4	5

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BORANG SOAL SELIDIK – SET IBUBAPA

問卷（家長）

Arahan :
填答注意事項 :

1. Sila jawab semua soalan di dalam borang ini. Kejujuran anda dalam menjawab soal selidik ini amat diharapkan.
1.請填寫以下題目，您的回答將對這項研究極有助益。

2. Sila rujuk penyelidik untuk sebarang pertanyaan.
2.若有任何問題，請詢問研究者。

3. Segala maklumat yang diberikan adalah sulit dan hanya untuk tujuan penyelidikan sahaja.
3.本問卷結果不公開且僅供學術用途使用，請您放心填寫。

Segala kerjasama anda amat dihargai dan didahulukan dengan ucapan terima kasih.

誠摯感謝您的協助。

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第一項　　：請填寫下列題目
Section 1　　: Please fill in the form

1. 性別　　：〇男性　〇女性
1. Gender　　: 〇Male　〇 Female

2. 族群　　：〇 馬來人　〇 華人　〇 印度人 〇 其他：_____（請填寫）
2. Ethnicity/race　　: 〇Malay　〇 Chinese　〇 Indian　〇Others (please state :……..)

3.出生日期（日/月/年）　　：[　　] / [　　] / [　　]
3. Date of birth　　*:* [　　] / [　　] / [　　]

4.家庭背景資料：
4. Socio-demographic background :

	父親 *Father*	母親 *Mother*
a) 學歷 *a) Educational level*	O 没有正规教育 *No formal schooling* O 小学 *Primary school* (UPSR) O 初中 (中一至中三) *Lower scondary school* (PMR)/SRP O 高中 (中四至中五) *Upper scondary school* (SPM)/ MCE O 大学先修班 *Pre-University* (STPM/ Diploma/ A level) O 大学 *Bachelor /Degree* O 碩博士 *Master*/Ph D	O 没有正规教育 *No formal schooling* O 小学 *Primary school* (UPSR) O 初中 (中一至中三) *Lower scondary school* (PMR)/SRP O 高中 (中四至中五) *Upper scondary school* (SPM)/ MCE O 大学先修班 *Pre-University* (STPM/ Diploma/ A level) O 大学 *Bachelor /Degree* O 碩博士 *Master*/Ph D
b) 職業 b) *Occupation*		
c) 每月總收入 (RM) *c)Monthly income (RM)*		
d) 体重（kg） *d) body weight(kg)*		
e) 身高(cm) *e) height(cm)*		

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第二項：孩子進食習慣

Section 2: Child Feeding Practices

請回答以下所有問題，并圈出一個相關的號碼。

*Please answer all the questions below and circle **only one** relevant number.*

i) 認爲孩子的體重

I) Perceived child's weight

1=非常瘦 *1=markedly underweight*	2=瘦 *2=underweight*	3=正常 *3=normal*	4=超重 *4=overweight*	5=明显超重 *5=markedly overweight*

No *No*	項目 *Statement*	選擇 *Scale*
1.	在您的孩子小於一歲的時候，您認爲他/她的體重是？ *What is your perception towards your child's body weight during the first year of life?*	1 2 3 4 5
2.	在您的孩子一至三歲的時候，您認爲他/她的體重是？ *What is your perception towards your child's body weight when your child is 1-3 years old?*	1 2 3 4 5
3.	在您的孩子四至六歲的時候，您認爲他/她的體重是？ *What is your perception towards your child's body weight when your child is 4-6 years old?*	1 2 3 4 5

ii) 關注孩子的體重

ii) Keprihatinan terhadap berat anak

1=完全不關注 *1=unconcerned*	2=很少關注 *2=a little concerned*	3=偶爾 *3=concerned*	4=經常關注 *4=fairly concerned*	5=非常關注 *5=very concerned*

No *No*	項目 *Statement*	選擇 *Scale*
1.	當您不在您的孩子身邊時, 您是否關注他/她吃太多？ *How concerned are you about your child eating too much when you are not around her?*	1 2 3 4 5
2.	您是否關注您的孩子為了保持理想的體重而節食呢？ *How concerned are you about your child having to diet to maintain a desirable weight?*	1 2 3 4 5
3.	您是否關注您的孩子體重過重？ *How concerned are you about your child becoming overweight?*	1 2 3 4 5

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iii) 對於孩子飲食的責任

iii) Perceived responsibility

1=從來沒有 *1=never*	2=很少 *2=seldom*	3=偶爾 *3=sometimes*	4=經常 *4=mostly*	5=每一次 *5=always*

No *No*	項目 *Statement*	選擇 *Scale*
1.	當您的孩子在家時，您負責準備食物給他/她？ *When your child is at home, how often are you responsible for feeding her?*	1 2 3 4 5
2.	您負責決定您的孩子食物的份量？ *How often are you responsible for deciding what your child's portion sizes are?*	1 2 3 4 5
3.	您負責決定您的孩子的食物種類？ *How often are you responsible for deciding if your child has eaten the right kind of foods?*	1 2 3 4 5

iv）營養監視

iv) Monitoring to eat

1=從來沒有 *1=never*	2=很少 *2=seldom*	3=偶爾 *3=sometimes*	4=經常 *4=mostly*	5=每一次 *5=always*

No *No*	項目 *Statement*	選擇 *Scale*
1.	您經常監控您的孩子吃的甜食（例如糖果、冰淇淋、蛋糕等等? *How often do you keep track of the sweets (candy, ice cream, cake, pies, pastries)that your child eats?*	1 2 3 4 5
2.	您經常監控您的孩子吃的零食（例如薯片,等等…）？ *How often do you keep track of the snack food (potato chips, cheese puffs) that your child eats?*	1 2 3 4 5
3.	您經常監控您的孩子吃的高脂肪食物？ *How often do you keep track of the high-fat foods that your child eats?*	1 2 3 4 5

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v) 飲食的控制

v) Restriction to eat

1=不同意 *1=disagree*	2=稍微不同意 *2=slightly disagree*	3=保持中立 *3=neutral*	4=稍微同意 *4=slightly Agree*	5=同意 *5=agree*

No *No*	項目 *Statement*	選擇 *Scale*
1.	我必需確保我的孩子不吃太多甜食（例如糖果、冰淇淋、蛋糕等等…） *I have to be sure that my child does not eat too many sweets (candy, icecream, cake or pastries).*	1 2 3 4 5
2.	我必需確保我的孩子不吃太多高脂肪的食物。 *I have to be sure that my child does not eat too many high-fat foods.*	1 2 3 4 5
3.	我必需確保我的孩子不吃太多他/她喜欢的食物。 *I have to be sure that my child does not eat too much of her favorite foods.*	1 2 3 4 5
4.	我故意把某些食物放在我的孩子觸及不到的地方。 *I intentionally keep some foods out of my child's reach.*	1 2 3 4 5
5.	我會把甜食（例如糖果、冰淇淋、蛋糕等等…）當作對孩子的獎賞。 *I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior.*	1 2 3 4 5
6.	我會把孩子喜歡的食物作為他/她乖巧聽話的獎賞。 *I offer my child her favorite foods in exchange for good behavior.*	1 2 3 4 5
7.	如果我不控制我孩子的飲食，他/她很可能會吃太多零食或垃圾食品（例如薯片等等…）。 *If I did not guide or regulate my child's eating, she would eat too many junk foods.*	1 2 3 4 5
8.	如果我不控制我孩子的飲食，他/她很可能會吃太多自己喜歡的食物。 *If I did not guide or regulate my child's eating, she would eat too much of her favorite foods.*	1 2 3 4 5

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vi) 飲食的管控

vi) Pressure to eat

1=不同意 *1=disagree*	2=稍微不同意 *2=slightly disagree*	3=保持中立 *3=neutral*	4=稍微同意 *4=slightly Agree*	5=同意 *5=agree*

No *No*	项目 *Statement*	选择 *Scale*
1.	我的孩子應該時常把盤里的食物都吃完。 *My child should always eat all of the food on her plate.*	1 2 3 4 5
2.	我必需確保我的孩子吃得充足。 *I have to be especially careful to make sure my child eats enough.*	1 2 3 4 5
3.	即使我的孩子說他不饿，我依然確保他進食。 *If my child says ``I'm not hungry'', I try to get her to eat anyway.*	1 2 3 4 5
4.	如果我沒有控制我孩子的飲食，他很可能會吃得比較少。 *If I did not guide or regulate my child's eating, she would eat much less than she should.*	1 2 3 4 5

第三項：孩子的飲食習慣

Section C: Child's Eating Behaviors

請仔細閱讀以下各項目，選擇最適合您孩子的飲食習慣，然後在格子裡打 √。

Please read the following statements and tick the boxes most appropriate to your child's eating behaviors.

No *No*	項目 *Statement*	從來沒有 *Never*	很少 *Rarely*	偶爾 *Some-times*	經常 *Often*	每一次 *Always*
1.	我的孩子很饞嘴。 *My child loves food.*	1	2	3	4	5
2.	不安的時候，我的孩子會吃得更多。 *My child eats more when worried.*	1	2	3	4	5
3.	我的孩子擁有很大的胃口。 *My child has a big appetite.*	1	2	3	4	5
4.	我的孩子進食的速度非常快。 *My child finishes his/her meal quickly.*	1	2	3	4	5
5.	我的孩子喜歡食物。 *My child is interested in food.*	1	2	3	4	5
6.	我的孩子經常向我要飲料。 *My child is always asking for a drink.*	1	2	3	4	5
7.	我的孩子經常抗拒新的食物。 *My child refuses new foods at first.*	1	2	3	4	5

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8.	我的孩子進食的速度非常慢。 *My child eats slowly.*	1	2	3	4	5
9.	憤怒的時候，我的孩子會吃得比平時少。 *My child eats less when angry.*	1	2	3	4	5
10.	我的孩子喜歡品嚐新的食物。 *My child enjoys tasting new foods.*	1	2	3	4	5
11.	累的時候，我的孩子會吃得比平時少。 *My child eats less when she/he is tired.*	1	2	3	4	5
12.	我的孩子經常向我要食物吃。 *My child is always asking for food.*	1	2	3	4	5
13.	煩悶的時候，我的孩子會吃得更多。 *My child eats more when annoyed.*	1	2	3	4	5
14.	如果被允許，我的孩子會吃得太多。 *If allowed to, my child would eat too much.*	1	2	3	4	5
15.	焦慮的時候，我的孩子會吃得更多。 *My child eats more when anxious.*	1	2	3	4	5
16.	我的孩子喜歡各種各樣的食物。 *My child enjoys a wide variety of foods.*	1	2	3	4	5
17.	我的孩子經常不把食物吃完。 *My child leaves food on his/her plate at the end of a meal.*	1	2	3	4	5
18.	我的孩子經常以超過 30 分鐘的時間把食物吃完。 *My child takes more than 30 minutes to finish a meal.*	1	2	3	4	5
19.	如果我的孩子可以選擇，他/她會用大部分的時間來進食。 *Given the choice, my child would eat most of the time.*	1	2	3	4	5
20.	我的孩子經常等待進食的時候。 *My child looks forward to mealtimes.*	1	2	3	4	5
21.	我的孩子經常在還沒把食物吃完，就覺得飽了。 *My child gets full before his/her meal is finished.*	1	2	3	4	5
22.	我的孩子享受進食的時候。 *My child enjoys eating.*	1	2	3	4	5
23.	開心的時候，我的孩子會吃得更多。 *My child eats more when she/he is happy.*	1	2	3	4	5

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24.	食物，不是可以用來哄我孩子的工具。 *My child is difficult to please with meals.*	1	2	3	4	5
25.	煩惱的時候，我的孩子會吃得比平時少。 *My child eats less when upset.*	1	2	3	4	5
26.	我的孩子容易覺得飽。 *My child gets full up easily.*	1	2	3	4	5
27.	空閒的時候，我的孩子會吃得更多。 *My child eats more when she/he has nothing else to do.*	1	2	3	4	5
28.	即使飽了，我的孩子依然會吃他/她喜歡的食物。 *Even if my child is full up she/he finds room to eat his/her favourite food.*	1	2	3	4	5
29.	如果我的孩子可以選擇，他/她會一整天都飲用飲料。 *If given the chance, my child would drink continuously throughout the day.*	1	2	3	4	5
30.	如果我的孩子吃了零食，他/她不會再吃正餐。 *My child cannot eat a meal if she/he has had a snack just before.*	1	2	3	4	5
31.	如果我的孩子可以選擇，他/她會經常飲用飲料。 *If given the chance, my child would always be having a drink.*	1	2	3	4	5
32.	我的孩子會對新的食物特別有興趣。 *My child is interested in tasting food she/he hasn't tasted before.*	1	2	3	4	5
33.	我的孩子會以食物的外觀來定義對於某種食物的喜厭，儘管他/她從來沒有嚐過某種食物。 *My child decides that she/he doesn't like a food, even without tasting it.*	1	2	3	4	5
34.	如果我的孩子可以選擇，他/她的口裡會經常含有食物。 *If given the chance, my child would always have food in his/her mouth.*	1	2	3	4	5
35.	正餐的時候，我的孩子會越吃越慢。 *My child eats more and more slowly during the course of a meal.*	1	2	3	4	5

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கருத்தறி பாரம் - பெற்றோர் பதிப்பு

BORANG SOAL SELIDIK – SET IBUBAPA

அறிவுறுத்தல்கள் :

Arahan :

1. அனைத்து கேள்விகளுக்கும் விடை அளிக்கவும். தங்களின் நேர்மை மிகவும் எதிர்பாக்கபடுகிறது.

1. Sila jawab semua soalan di dalam borang ini. Kejujuran anda dalam menjawab soal selidik ini amat diharapkan.

2. ஏதேனும் கேள்விகள் இருந்தால் ஆய்வாளர்களை கேட்கலாம்.

2. Sila rujuk penyelidik untuk sebarang pertanyaan.

3. நீங்கள் தரும் தகவல்கள் ஆய்வுகளுக்கு மட்டுமே பயன்படுத்த படும். அனைத்தும் தகவல்களின் ரகசியம் காக்கப்படும்.

3. Segala maklumat yang diberikan adalah sulit dan hanya untuk tujuan penyelidikan sahaja.

உங்கள் ஒத்துழைப்பு பாராட்டத்தக்கது. நன்றி.

Segala kerjasama anda amat dihargai dan didahulukan dengan ucapan terima kasih.

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பிரிவு A: ஏற்ற கூற்றுக்களுக்கு குறி இடவும்

Bahagian A : Sila isi atau tanda pernyataan berkenaan.

1. பால் : ○ஆண் ○பெண்

1. Jantina : ○Lelaki ○Perempuan

2. இனம் : ○ மலாய் ○சீனம் ○இந்தியர் ○அதை தவிர்த்து

2. Kumpulan etnik/ bangsa : ○Melayu ○Cina ○India ○Lain- lain (nyatakan:.....)

3. பிறந்த தேதி (நாள்/மாதம்/ஆண்டு: ☐☐/ ☐☐/ ☐☐☐☐

3. Tarihk lahir (hari/ bulan/ tahun) : ☐☐/ ☐☐/ ☐☐☐☐

4.சமூக மக்கள் பின்னணி :

4. Latar belakang sosio-demografi :

	அப்பா Bapa	அம்மா Ibu
a) கல்வி தரம் a) Taraf pendidikan	o முறையான கல்வி இல்லை Tiada bersekolah formal o ஆரம்ப கல்வி (யுபிஸ்ர்)Sekolah rendah (UPSR) o கீழ் இடைநிலை கல்வி (பிம்ர்)Sekolah Menengah Bawah (PMR) o மேழ் இடைநிலை கல்வி (ஸ்பிம்) Sekolah Menengah Atas(SPM)/ MCE o பல்கழைகலக நுளைவு படிப்பு (ஸ்டிபிம்/ டிப்லோமா/ஏ-லெவல்) Pre-Universiti (STPM/ Diploma/ A level) o பட்டபடிப்பு	o முறையான கல்வி இல்லை Tiada bersekolah formal o ஆரம்ப கல்வி (யுபிஸ்ர்)Sekolah rendah (UPSR) o கீழ் இடைநிலை கல்வி (பிம்ர்)Sekolah Menengah Bawah (PMR) o மேழ் இடைநிலை கல்வி (ஸ்பிம்) Sekolah Menengah Atas(SPM)/ MCE o பல்கழைகலக நுளைவு படிப்பு (ஸ்டிபிம்/ டிப்லோமா/ஏ-லெவல்) Pre-Universiti (STPM/ Diploma/ A level) o பட்டபடிப்பு

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	(டிக்ரீ)Bachelor Muda O பீ.ச்.டீ/மாஸ்டர் Ph D/ Sarjana	(டிக்ரீ)Bachelor Muda O பீ.ச்.டீ/மாஸ்டர் Ph D/ Sarjana
b) தொழில் b) Perkerjaan		
c) ஒரு மாத மொத்த வருமானம் (RM) c) Jumlah Pendapatan Sebulan (RM)		

பகுதி 2 :குழந்தை உணவு முறைகள்

Bahagian 2: Pemberian Makanan kepada Anak

தயவு செய்து கீழே உள்ள அனைத்து கேள்விகளுக்கு பதிலளிக்கவும் மற்றும் ஒரே ஒரு பொருத்தமான பதிலல் வட்டமிடவும்.

Arahan: Sila bulatkan **satu nombor** yang paling sesuai bagi setiap kenyataan yang berikut.

i) உணரப்பட்ட குழந்தையின் எடை

i) Tanggapan terhadap berat badan anak

1=மிக மெல்லிய 1=Sangat Kekurangan Berat Badan	*2*=மெல்லிய 2=Kekurangan Berat Badan	*3*=சாதாரண 3=Normal	*4*=குண்டு 4=Berlebihan Berat Badan	*5*=மிக குண்டு 5=Sangat Berlebihan Berat Badan

No	Kenyataan	Skala
1.	உங்கள் கருத்து என்ன உங்கள் குழந்தையின் மீது வாழ்க்கையின் முதல் ஆண்டில் உடல் எடை? Apakah tanggapan anda terhadap berat badan anak anda semasa tahun pertama kelahirnya?	1 2 3 4 5

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2.	உங்கள் குழந்தை 1-3 வயது இருக்கும் போது, உங்கள் குழந்தையின் உடல் எடை மீது உங்கள் கருத்து என்ன? Apakah tanggapan anda terhadap berat badan anak anda semasa dia berumur 1-3 tahun?	1 2 3 4 5
3.	உங்கள் குழந்தை 4-6 வயது இருக்கும் போது, உங்கள் குழந்தையின் உடல் எடை மீது உங்கள் கருத்து என்ன? Apakah tanggapan anda terhadap berat badan anak anda semasa dia berumur 4-6 tahun?	1 2 3 4 5

ii) குழந்தையின் எடை பற்றி அக்கறை

ii) Keprihatinan terhadap berat anak

1=அக்கறை இல்லை 1=Tak Prihatin	*2*=குறைவான அக்கறை 2=Kurang Prihatin	*3*=அக்கறை 3=Prihatin	*4*=சிறிதளவு அக்கறை 4=Agak Prihatin	*5*=மிகவும் அக்கறை 5=Sangat Prihatin

No	Kenyataan	Skala
1.	உங்கள் குழந்தை அதிகமாக சாப்பிடுவதை பற்றி, எப்படி சம்பந்தப்பட்ட நீங்கள் அவரை சுற்றி இல்லாத போது அக்கறை? Bagaimana prihatinkah anda terhadap anak anda jika dia makan terlalu banyak apabila anda tidak bersamanya?	1 2 3 4 5
2.	எப்படி உங்கள் குழந்தை தனது எடையை திருப்திகரமான நிலையில் அந்த உணவு கட்டுப்பாடு தேவை? Bagaimana prihatinkah anda terhadap anak anda perlunya untuk berdiet agar berat badannya berada dalam keadaan yang memuaskan?	1 2 3 4 5
3.	அவர் அதிக எடை இருந்தால் எப்படி நீங்கள் உங்கள் குழந்தையை நீங்கள் அக்கறை? Bagaimana prihatinkah anda terhadap anak anda jika dia mempunyai berat badan yang berlebihan?	1 2 3 4 5

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iii) உணரப்பட்ட பொறுப்பு

iii) Tanggapan tanggungjawab terhadap pemakanan anak

1=இல்லை 1=Tak Pernah	*2*=எப்போதாவது 2=Jarang	*3*=சில நேரங்களில் 3=Kadang-kadang	*4*=அடிக்கடி 4=Kerap	*5*=எப்பொழுதும் 5=Selalu

No	Kenyataan	Skala
1.	அவர் வீட்டில் இருக்கும் போது எப்படி அடிக்கடி நீங்கள் உங்கள் குழந்தையை நீங்களே உணவு கொடுக்க முடியும்? Berapa kerapkah anda memberikan sendiri makanan kepada anak anda semasa dia berada di rumah?	1 2 3 4 5
2.	உங்கள் பொறுப்பு எப்படி அடிக்கடி, உங்கள் குழந்தையின் சுயமாக பரிமாறப்படும் உணவு அளவை தீர்மானிக்க வேண்டியது? Berapa kerapkah anda bertanggungjawab untuk menentukan sendiri saiz hidangan anak anda?	1 2 3 4 5
3.	உங்கள் பொறுப்பு எப்படி அடிக்கடி, உங்கள் குழந்தை சரியான வகையான உணவுகள் உண்ணப்படுகிறது? Berapa kerapkah anda bertanggungjawab untuk menentukan sendiri makanan yang sesuai untuk dimakan oleh anak anda?	1 2 3 4 5

iv) குழந்தை ஊட்டச்சத்து கண்காணிப்பு

iv) Pemantauan terhadap pemakanan anak

1=இல்லை 1=Tak Pernah	*2*=எப்போதாவது 2=Jarang	*3*=சில நேரங்களில் 3=Kadang-kadang	*4*=அடிக்கடி 4=Kerap	*5*=எப்பொழுதும் 5=Selalu

No	Kenyataan	Skala
1.	எப்படி அடிக்கடி நீங்கள் உங்கள் குழந்தை இனிப்பு உணவுகளை உட்கொள்வது (சாக்லேட், ஐஸ்கிரீம்,	1 2 3 4 5

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	கேக் அல்லது பேஸ்ட்ரி) கண்காணிக்கபடுகிறது? Berapa kerapkah anda memantau pengambilan makanan manis (gula-gula,aiskrim,kek atau pastry) oleh anak anda?	
2.	எவ்வளவு அடிக்கடி உங்கள் குழந்தை சிற்றுண்டி உணவுகள் (உருளைக்கிழங்கு சிப்ஸ்) உட்கொள்வது கண்காணிக்கபடுகிறது? Berapa kerapkah anda memantau pengambilan makanan snek (keropok atau kerepek kentang) oleh anak anda?	1 2 3 4 5
3.	எவ்வளவு அடிக்கடி உங்கள் குழந்தை அதிக கொழுப்புச்சத்து உணவுகளை உட்கொள்வது கண்காணிக்கபடுகிறது? Berapa kerapkah anda memantau pengambilan makanan yang tinggi kandungan lemak oleh anak anda?	1 2 3 4 5

v) குழந்தை சாப்பிடுவதற்கு தடை

v) Larangan terhadap pemakanan anak

1=உடன்படவில்லை 1=Tak Setuju	*2*=சற்றே உடன்படவில்லை 2=Kurang bersetuju	*3*=நடுநிலையான 3=Neutral	*4*=ஓரளவு ஏற்கிறேன் 4=Agak Bersetuju	*5*=ஏற்கிறேன் 5=Setuju

No	Kenyataan	Skala
1.	நான் என் குழந்தை பல இனிப்பு (சாக்லேட், ஐஸ்கிரீமை, அல்லது கேக்) சாப்பிட முடியாது என்று உறுதியாக இருக்க வேண்டும். Saya perlu memastikan bahawa anak saya tidak makan terlalu banyak makanan yang manis (gula-gula,aiskrim,kek atau pastry) oleh anak anda.	1 2 3 4 5
2.	நான் என் குழந்தை அதிகமான உயர் கொழுப்பு உணவுகளை சாப்பிட கூடாது	1 2 3 4 5

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	என்று இருக்க வேண்டும். Saya perlu memastikan bahawa anak saya tidak makan terlalu banyak makanan yang tinggi kandungan lemak.	
3.	நான் என் குழந்தை மிகவும் பிடித்தமான உணவுகள் சாப்பிட முடியாது என்று உறுதியாக இருக்க வேண்டும். Saya perlu memastikan bahawa anak saya tidak makan terlalu banyak makanan kegemarannya.	1 2 3 4 5
4.	நான் வேண்டுமென்றே என் குழந்தையின் எல்லையை தாண்டி சில உணவுகளை வைத்துக்கொள்வேன். Saya sengaja menjauhkan sesetengah makanan dari jangkauan anak saya.	1 2 3 4 5
5.	நான் என் குழந்தைகள் அவரது நன்னடத்தை காரணமாக சர்க்கரை உணவுகள் (சாக்லேட், ஐஸ்கிரீம், கேக் அல்லது பேஸ்ட்ரி) கொடுக்கிறேன். Saya memberikan anak saya makanan yang manis (gula-gula,aiskrim,kek atau pastry) kerana dia berkelakuan baik.	1 2 3 4 5
6.	நான் என் குழந்தை நல்ல நடத்தை ஈடாக அவரது விருப்பமான உணவுகள் வழங்குகின்றன. Saya memberikan anak saya makanan kegemarannya supaya dia berkelakuan baik.	1 2 3 4 5
7.	நான் என் குழந்தையின் உணவில் கட்டுப்படுத்த முடியவில்லை என்றால், அவர் அதிகமாக குப்பை உணவு சாப்பிடுவார். Jika saya tidak mengawal pemakanan anak saya, dia akan makan terlalu banyak makanan ringan (kerepek kentang, keropok, dan lain-lain).	1 2 3 4 5
8.	நான் என் குழந்தையின் உணவில் கட்டுப்படுத்த முடியவில்லை	

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	என்றால், அவர் பல பிடித்தமான உணவுகள் சாப்பிடுவார். Jika saya tidak mengawal pemakanan anak saya, dia akan makan terlalu banyak makanan kegemarannya.	1 2 3 4 5

vi) சாப்பிட அழுத்தம்

vi) Tekanan untuk makan

1=உடன்படவில்லை 1=Tak setuju	*2*=சற்றே உடன்படவில்லை 2=Kurang Bersetuju	*3*=நடுநிலையான 3=Neutral	*4*=ஓரளவு ஏற்கிறேன் 4=Agak Bersetuju	*5*=ஏற்கிறேன் 5=Setuju

No	Kenyataan	Skala
1.	என் குழந்தை எப்போதும் தன் தட்டில் உணவு அனைத்து சாப்பிட வேண்டும். Anak saya harus sentiasa menghabiskan makanan yang terdapat di dalam pinggannya.	1 2 3 4 5
2.	நான் என் குழந்தை போதுமான சாப்பிடுவார் உறுதி இருக்க வேண்டும். Saya perlu berhati-hati untuk memastikan anak saya makan dengan secukupnya.	1 2 3 4 5
3.	என் குழந்தை" `` எனக்கு பசியில்லை சொன்னால், நான் அவனை சாப்பிட செய்ய முயற்சிப்பேன். Jika anak saya mengatakan dia tidak lapar, saya tetap akan cuba untuk memastikan dia makan.	1 2 3 4 5
4.	நான் என் குழந்தையின் உணவு வழிகாட்டும் அல்லது கட்டுப்படுத்த முடியவில்லை என்றால், அவள் குறைவாக சாப்பிட வேண்டும். Jika saya tidak mengawal pemakanan anak saya, dia akan makan kurang daripada yang sepatutnya.	1 2 3 4 5

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பிரிவு 3 : குழந்தை நடத்தைகள் உணவு Bahagian 3: Tabiat Pemakanan Kanak-kanak

Child Eating Behavior Questionnaire (CEBQ)

பின்வரும் கூற்றுகளை படித்து உங்கள் குழந்தையின் உணவு பழக்கவழக்கங்கள் என மிகவும் பொருத்தமான பெட்டிகளில் டிக் செய்யவும்.Sila baca kenyataan di bawah dan tandakan **satu sahaja** kotak yang paling sesuai dengan tabiat pamakanan anak anda.

No	Kenyataan	இல்லை Tidak Pernah	எப்போதாவது Jarang	சில நேரங்களில் Kadang-kadang	அடிக்கடி Kerap	எப்பொழுதும் Selalu
1.	என் குழந்தை உணவு நேசிக்கிறார். Anak saya suka makan.	1	2	3	4	5
2.	என் குழந்தை கவலையாக இருக்கும் போது இன்னும் சாப்பிடுவார். Anak saya akan makan lebih jika dia berasa risau.	1	2	3	4	5
3.	என் குழந்தைக்கு ஒரு பெரிய சாப்பிடும் விருப்பம் உள்ளது. Anak saya mempunyai selera yang besar.	1	2	3	4	5
4.	என் மகன் விரைவில் சாப்பிடுகிறது. Anak saya menghabiskan makanannya dengan cepat.	1	2	3	4	5
5.	என் குழந்தைக்கு சாப்பாடு ஆர்வம் உள்ளது. Anak saya berminat dengan makanan.	1	2	3	4	5
6.	என் குழந்தை எப்போதும் ஒரு பானம் குடிக்க கேட்கிறது. Anak saya selalu meminta diberikan minuman.	1	2	3	4	5
7.	என் குழந்தைக்கு புதிய சாப்பாடு பிடிக்காது. Anak saya tidak suka kepada makanan yang baru.	1	2	3	4	5
8.	என் குழந்தை மெதுவாக சாப்பிடுவார். Anak saya makan dengan lambat.	1	2	3	4	5

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9.	என் குழந்தை கோபம் இருக்கும் போது குறைவாக சாப்பிடுவார். Anak saya makan sedikit bila berasa marah.	1	2	3	4	5
10.	என் குழந்தைக்கு புதிய உணவுகளை மகிழ்ச்சியாக அனுபவிக்கின்றனர். Anak saya seronok menikmati makanan baru.	1	2	3	4	5
11.	அவள் / அவன் சோர்வாக இருக்கும் போது குறைவாக சாப்பிடுவார். Anak saya makan sedikit apabila berasa penat.	1	2	3	4	5
12.	என் குழந்தைக்கு எப்போதும் சாப்பாடு கேட்கிறது. Anak saya kerap meminta makanan.	1	2	3	4	5
13.	என் குழந்தை கோபமாயிருந்தாலும் இன்னும் சாப்பிடுவார். Anak saya makan lebih bila berasa marah.	1	2	3	4	5
14.	அனுமதி இருந்தால், என் மகன் மிகவும் சாப்பிடுவார். Jika dibenarkan, anak saya akan makan terlalu banyak.	1	2	3	4	5
15.	என் குழந்தைக்கு இன்னும் ஆர்வத்துடன் சாப்பிடுவார். Anak saya makan lebih bila berasa cemas.	1	2	3	4	5
16.	என் குழந்தைக்கு பல வகையான உணவுகளை கிடைப்பது மகிழ்ச்சி. Anak saya berasa seronok dengan adanya makanan yang pelbagai.	1	2	3	4	5
17.	சாப்பிட்ட பிறகு என் மகனின் தட்டில் மிச்சத்தை உள்ளன. Terdapat lebihan makanan dalam pinggan anak saya selepas makan.	1	2	3	4	5
18.	என் குழந்தை உணவை முடிக்க 30க்கும் மேற்பட்ட நிமிடங்கள் எடுக்கும். Anak saya mengambil masa lebih 30 minits untuk habis makan.	1	2	3	4	5

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19.	தேர்வு கொடுக்கப்பட்டால், என் குழந்தையை அனைத்து நேரம் சாப்பிடுவார். Jika diberi pilihan, anak saya akan makan sepanjang masa.	1	2	3	4	5
20.	என் மகன் சாப்பாட்டுக்கு காத்திருக்க விரும்புகிறார். Anak saya suka menunggu waktu makan.	1	2	3	4	5
21.	என் குழந்தைக்கு அவன் / அவள் சாப்பாட்டுக்குமுன்பு முழுமை பெறுகிறது. Anak saya akan kenyang sebelum makananya habis.	1	2	3	4	5
22.	என் மகன், அவர்களின் சாப்பாட்டுக்கு மகிழ்ச்சியாக உள்ளது. Anak saya gembira sewaktu makan.	1	2	3	4	5
23.	அவர் மகிழ்ச்சியாக இருக்கும் போது என் மகன் இன்னும் சாப்பிடுவார். Anak saya makan banyak bila dia berasa gembira.	1	2	3	4	5
24.	என் மகன் சாப்பிட அழைப்பு கடினம். Anak saya sukar untuk diajak makan.	1	2	3	4	5
25.	என் குழந்தைக்கு கவலையாக இருக்கும் போது.குறைவாக சாப்பிடுவார். Anak saya makan sedikit bila dia berasa sedih.	1	2	3	4	5
26.	என் குழந்தைக்கு உணவு எளிதாக முழுமையான பெறுகிறது. Anak saya cepat dan mudah kenyang.	1	2	3	4	5
27.	வேறு எதுவும் செய்யவில்லை என்றால் என் குழந்தைக்கு இன்னும் சாப்பிடுவார். Anak saya makan dengan banyak bila dia tiada perkara yang peril dibuat.	1	2	3	4	5
28.	என் குழந்தைக்கு அவள் முழு / அவன் / அவள் பிடித்த சாப்பாடு சாப்பிடுவதற்கு	1	2	3	4	5

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	வாய்ப்பாக காண்கிறார். Walaupun anak saya masih kenyang, dia akan mencari ruangan untuk makan makanan kegemarannya.					
29.	வாய்ப்பு கொடுக்கப்பட்டால், என் குழந்தைக்கு நாள் முழுதும் குடிப்பார். Jika diberi pilihan, anak saya akan minum secara berterusan sepanjang hari.	1	2	3	4	5
30.	என் குழந்தை தின்பண்டங்கள் உண்டு என்றால் அவள் / அவன் உணவு சாப்பிட முடியாது. Anak saya tidak boleh makan jika dia sudah mengambil snek sebelumnya.	1	2	3	4	5
31.	வாய்ப்பு கொடுக்கப்பட்டால், என் குழந்தைக்கு எப்போதும் ஒரு பானம் குடிக்க கொண்டும். Jika diberi pilihan, anak saya akan sentiasa membawa minuman.	1	2	3	4	5
32.	என் குழந்தைக்கு அவள் / அவன் முன் சுவைக்கத உணவு சாப்பிட ஆர்வம் உள்ளது. Anak saya suka merasa makanan yang tidak pernah diambil sebelum ini.	1	2	3	4	5
33.	என் மகன் முதல் உணவை சுவைக்காமல் சாப்பிட பிடிக்காது. Anak saya tidak suka makan walaupun tanpa merasanya terlebih dahulu.	1	2	3	4	5
34.	தேர்வு கொடுக்கப்பட்டால், என் குழந்தை எப்போதும் வாயில் உணவு இருக்கும். Jika diberi pilihan, anak saya akan sentiasa mempunyai makanan di dalam mulutnya.	1	2	3	4	5
35.	என் குழந்தை உணவு இன்னும் மெதுவாக சாப்பிடுவார். Anak saya makan banyak dan lebih perlahan semasa makan.	1	2	3	4	5

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EXTENDED ABSTRACT

COMPARISON OF PARENTAL BELIEFS, ATTITUDES AND FEEDING PRACTICES AND CHILDREN'S EATING BEHAVIOURS BETWEEN OVERWEIGHT AND NORMAL WEIGHT PRIMARY SCHOOL CHILDREN IN PUCHONG, SELANGOR

Chong Wei Gin

Obesity is defined as abnormal or excessive fat accumulation in the body that may impair health. According to the World Health Organization (WHO), globally, prevalence of overweight and obesity have more than doubled since 1980 and it's linked to more deaths than underweight. Worldwide prevalence of childhood obesity continues to rise over the past three decades. The rates increased from 4.2% in 1990 to 6.7% in 2010 and this trend is expected to reach 9.1% in 2020. This problem had affected both developed and developing countries. Data from previous studies clearly showed increasing trends in obesity prevalence and severity of childhood obesity in many countries such as United States, Japan, Africa, Brazil, India as well as Malaysia.

Parental influences including BMI of parents, parental beliefs, attitudes and feeding practices as well as children's eating behaviours were selected as variables to be studied among other factors contributing to childhood obesity. This is because parents play an important role in feeding children at early childhood age. The feeding practices of the parents will affect their children's body weight and predict their eating behaviours in later life. Eating behaviours may be varying among each child whereby this will eventually linked with their body weight status. Physiologic cues

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among children such as hunger and satiation during feeding had been identified as important factors on obesity prevention. Hence, this cross-sectional comparative study aimed to compare parental beliefs, attitudes and feeding practices and children's eating behaviours between overweight and normal weight primary school children in Puchong, Selangor. Ethical approval from Jawatankuasa Etika Universiti untuk Penyelidikan Melibatkan Manusia (JKEUPM) from Universiti Putra Malaysia (UPM) and Ministry of Education (MOE) was obtained. All the parents and children included in this study had given their consent prior data collection.

Four National Primary Schools in Puchong were randomly selected. There were two phases of data collection in this study. During Phase I of the study, a health screening session was conducted with the aim to determine the prevalence of overweight and obesity among Standard 4 and 5 primary school children in selected primary schools located at Puchong, Selangor. A total of 384 Standard four and five children were participated in this study. Body weight and height of the children were measured. BMI-for-age of the children was calculated using WHO Anthroplus Version 1.0.4 software. Then, children were classified into BMI-for-age categories based on WHO Growth Reference 2007.

Based on the body weight status of the children (n=384), 100 overweight or obese (OW) children were matched with 100 normal weight (NW) children based on matching criteria, namely sex, age and ethnicity. Their parents were recruited as the study subjects for Phase II of the study (n=200). The Phase II of the study aimed to compare the parents' BMI, parental beliefs, attitudes and feeding practices and children's eating behaviours between OW and NW children.

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A set of self-administered questionnaire which included socio-demographic characteristics (sex, ethnicity, marital status, educational level, parental monthly income and occupation), Child Feeding Questionnaire (CFQ) and Children's Eating Behaviours Questionnaire (CEBQ) were brought back by the children to be completed by their parents. Self-reported body weight and height by the parents were also obtained. CFQ was used to assess parental beliefs, attitudes and feeding practices while CEBQ was used to assess children's eating styles.

For Phase I of the study, almost half of the children were boys (47.4%) while another half were girls (52.6%). The mean age of the children (n=384) was 11.10 ± 0.53 years. Majority of them were 11 years old (72.9%) and the rest were 10 years old (27.1%). The children comprised 88.3% Malay, 2.9% Chinese, 8.1% Indian and 0.8% other races. The prevalence of childhood overweight and obesity (35.6%) was three times higher than thinness and severe thinness (11.7%) among primary school children in Puchong, Selangor. In other words, about one in three children was either overweight or obese.

For Phase II of the study, the mean age of children (n=200) was 11.13±0.52 years which made up of Malay (94.0%), followed by Indian (4.0%) and Chinese (2.0%). In terms of BMI of parents, no significant difference was found in paternal BMI between OW and NW children (OW: 27.08 ± 4.80 kgm^{-2}; NW: 26.54 ± 4.14 kgm^{-2}, t=1.970; p>0.05). But significant difference was found in maternal BMI between two groups. Maternal BMI was higher among OW children than their NW counterparts (OW: 27.78 ± 5.52kgm^{-2}; NW: 24.38 ± 3.58kgm^{-2}, t=4.388, p<0.05). This is because fathers spent lesser time with their children due to long working

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hours and they often missed the chance to have meals at home with their children compared to mothers who were full-time housewives.

Significant differences were found in perceived child weight (OW:3.03±0.43; NW:2.86±0.38, t=3.052, p<0.05), pressure to eat (OW:3.62±0.74; NW:3.99±0.84, t=-3.310, p<0.05), enjoyment of food (OW: 3.59 ± 0.78; NW: 3.22 ± 0.66, t=3.641, p<0.05), food responsiveness (OW: 2.42±0.94; NW: 2.09 ± 0.69, t=2.821, p<0.05), emotional over-eating (OW: 2.08 ± 0.82; NW: 1.85 ± 0.72, t=2.158, p<0.05), satiety responsiveness (OW: 2.36 ± 0.52; NW: 2.76 ± 0.59, t= -4.966, p<0.05) and food fussiness (OW: 2.46 ± 0.5; NW: 2.67±0.54, t= -2.795, p<0.05) between OW and NW groups. OW children had higher mean scores in perceived child weight factor, enjoyment of food, food responsiveness and emotional over-eating subscales but lower mean scores in pressure to eat factor, satiety responsiveness and food fussiness. This indicated that parents of OW children were able to perceive their child as overweight compared to parents of NW children. They also tend to give less pressure to eat on OW children compare to NW children. OW children were more enjoy when eating, more likely to respond to food and often asked for food, tends to eat more in response to a range of negative emotions, such as anger and anxiety, hardly reach satiety level and less picky on food compared to their NW counterparts.

Meanwhile, no significant differences were found in perceived responsibility (t = 0.546, p > 0.05), concern about child weight (t = -1.666, p > 0.05), monitoring (t = -0.726, p > 0.05), restriction (t = 1.489, p > 0.05), desire to drink (t = 0.556, p > 0.05), slowness in eating (t =-0.522, p > 0.05), and emotional under-eating (t = 0.153, p > 0.05) between the two groups. These results indicated parents for both OW and

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NW groups had the similar responsibility level, concern level, monitoring level and restriction on food in feeding their children. OW and NW children had the similar desire on sweetened drinks, eating rate and eating desire in term of under-eating when emotionally affected.

In short, the findings from this study concluded that the prevalence of overweight and obesity was three times higher than thinness among primary school children in Puchong, Selangor. OW children were more likely to have overweight or obese mother compare to their NW counterparts. Meanwhile, parents of OW children were more likely to perceive their children as overweight and they tend to give less pressure to eat on OW children as compared to NW children. On the other hand, OW children had higher food enjoyment, higher respond to food and eat more when emotionally affected compared to their NW counterparts. OW children also hardly reached satiety level and less picky on food compared to NW children.

Thus, training programs for parents on understanding their children's eating behaviours and ways to feed their children are imperative to overcome childhood obesity problem. Health care professionals should implement programs for parents on understanding their children's eating behaviours and promoting healthy eating behaviours at early age. Further research can use the findings from this present study as baseline references and can enhance their study by doing nationwide longitudinal study and include other variables such as genetics, psychological and environmental factors in order to provide a more comprehensive picture on the major factors that contributing to childhood obesity.

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