



**UNIVERSITI PUTRA MALAYSIA**

***ASSOCIATIONS OF SOCIODEMOGRAPHIC, MATERNAL CHARACTERISTIC,  
CHILD BIRTH WEIGHT AND BEHAVIORAL FACTORS WITH WEIGHT STATUS  
AMONG PRESCHOOL CHILDREN IN JOHOR***

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UNIVERSITI PUTRA MALAYSIA  
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AMONG PRESCHOOL CHILDREN IN JOHOR**

**BY**

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

This project entitled “Associations of Sociodemographic, Maternal Characteristic, Child Birth Weight And Behavioral Factors With Weight Status Among Preschool Children In Johor” was prepared by Nurul Najwa Binti Mohd Noor and submitted to the Faculty of Medicine and Health Sciences as a partial fulfillment of the requirement for the degree of Bachelor of Science (Dietetics) from the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia.



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## Abstract

### **ASSOCIATIONS OF SOCIODEMOGRAPHIC, MATERNAL CHARACTERISTIC, CHILD BIRTH WEIGHT AND BEHAVIORAL FACTORS WITH WEIGHT STATUS AMONG PRESCHOOL CHILDREN IN JOHOR**

**Nurul Najwa Binti Mohd Noor**

Childhood malnutrition is a serious health issue that can have adverse impacts on health at an older age. Symptoms of undernutrition and overnutrition can be assessed using screening tools such as anthropometric measures. In relation to this, body weight status is a good indicator to assess the nutritional status of preschool children. Therefore, this study aimed to determine the factors associated with body weight status among preschool children in Johor. A cross-sectional study was conducted among 372 maternals of preschool children in Kota Tinggi, Johor. A self-administered questionnaire was used to obtain data that included sociodemographic characteristics, anthropometry characteristics, birth weight, eating behaviour (Child Eating Behaviour Questionnaire) and sleeping habit (Children Sleeping Habit Questionnaire). World Health Organization Growth Standard 2006 and World Health Organization Growth Reference 2007 were used to determine the BMI-for-age z-score. As a result, majority of the children were Malays (98.9%) with a mean age of  $5.19 \pm 0.65$  years old. Half of the children had a normal BMI-for-age z-score (51.3%) while the rest were wasted/thinness (18%) and overweight/obese (30.6%). Gender ( $X^2=7.690$ ,  $p=0.021$ ) and desire to drink ( $r= -0.110$ ,  $p= 0.034$ ) were significantly associated with weight status. However, no significant association were found between sociodemographic characteristics, anthropometry characteristics, birth weight, eating behaviour and sleeping habits with weight status ( $p>0.05$ ). In conclusion, about one-third of the children were overweight/obese. A more in-depth study needs to be done to find the factors associated with weight status among preschool children. For further studies, dietary intake should be included to evaluate children's diet and the risk of overweight and obesity.

## Abstract

### **HUBUNGAN ANTARA FAKTOR SOSIODEMOGRAFI, IBU, BERAT LAHIR DAN TINGKAH LAKU DENGAN STATUS BERAT BADAN DALAM KALANGAN KANAK KANAK PRASEKOLAH DI JOHOR**

**Nurul Najwa Binti Mohd Noor**

Malnutriti dalam kalangan kanak-kanak adalah masalah kesihatan yang serius yang boleh memberi kesan buruk kepada kesihatan pada usia tua. Kekurangan dan kelebihan zat makanan boleh dikenal pasti menggunakan alat saringan seperti ukuran antropometri. Sehubungan dengan ini, status berat badan adalah petunjuk yang baik bagi menilai status pemakanan kanak-kanak prasekolah. Oleh itu, kajian ini bertujuan untuk menentukan faktor-faktor yang berkaitan dengan status berat badan dalam kalangan kanak-kanak prasekolah di Johor. Kajian keratan rentas dilakukan di kalangan 372 ibu kanak-kanak dari prasekolah awam di Kota Tinggi, Johor. Soal selidik yang dikendalikan sendiri digunakan untuk mengumpul data yang merangkumi ciri sosiodemografi, ciri antropometri, berat lahir, tingkah laku makan (*Child Eating Behaviour Questionnaire*) dan tabiat tidur (*Children Sleeping Habit Questionnaire*). *World Health Organization Growth Standard 2006* dan *World Health Organization Growth Reference 2007* telah digunakan bagi mendapatkan skor BMI-untuk-usia. Hasil kajian ini menunjukkan bahawa majoriti responden adalah berbangsa Melayu (98.9%) dengan min umur  $5.19 \pm 0.65$  tahun. Separuh daripada responden mempunyai skor BMI-untuk-usia yang normal (51.3%) manakala 18% adalah kurus / kurang berat badan dan 30.6% mempunyai berat badan berlebihan/ obes. Jantina ( $X^2 = 7.690$ ,  $p = 0.021$ ) dan keinginan untuk minum ( $r = -0.110$ ,  $p = 0.034$ ) dikaitkan secara signifikan dengan status berat badan. Walau bagaimanapun, tidak terdapat hubungan yang signifikan antara ciri sosiodemografi, ciri antropometri, berat lahir, tingkah laku makan dan tabiat tidur dengan status berat badan ( $p > 0.05$ ). Kesimpulannya, satu pertiga kanak-kanak mempunyai berat badan berlebihan /obes. Kajian yang lebih mendalam perlu dilakukan untuk mengenal pasti faktor-faktor yang berkaitan dengan status berat badan di kalangan kanak-kanak prasekolah. Kajian yang akan datang digalakkan untuk mengambil sejarah pemakanan bagi menilai diet kanak-kanak dan risiko berat badan berlebihan dan obes.

# CHAPTER 1

## Introduction

### 1.1 Research Background

The latent period of growth begins after infancy and lasts until puberty. During preschool and school-age, growth is usually steady and gradual. Children with periods of no growth according to the growth spurt in individuals can be erratic. These trends typically correlate with related increases in appetite and food consumption. However, the period of slow growth and poor appetite in children can cause anxiety, leading to mealtime struggles, especially for a first-time parent. This problem could lead to malnutrition among children (Institute of Medicine, 2017). According to the World Health Organization (WHO), malnutrition relates to deficiencies, excesses, or imbalance in a person's energy intake and/or nutrients. The term malnutrition refers to two large classes of conditions; undernutrition which covers stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and overnutrition includes overweight and obesity. Early detection of malnutrition could help parents and health care providers to detect and manage issues related to undernutrition and overnutrition.

Almost half of all deaths in children under 5 of age are due to undernutrition (Unicef, 2020). Children who are undernutrition have a higher risk of dying from common illnesses, a delayed recovery that increases the incidence and severity of infections. More than five or 21.3% of children under 5 years of age internationally had stunted growth in 2019 (Unicef, 2020). Two out of five stunted children lived in South Asia in 2019, while two out of five others lived in sub-Saharan Africa (Unicef, 2020). About 47 million children under five years of age were wasted globally in 2019, of which 14.3 million were severely wasted; the prevalence is 6.9% and 2.1%

respectively (Unicef, 2020). Over half of all wasted children lived in South Asia in 2019 and one-quarter in sub-Saharan Africa with similar rates for children who were severely wasted (Unicef, 2020). According to a report on other countries such as Bangladesh, their prevalence of stunting was 41.3%, wasting 15.5% and underweight was 36.2%, while in Pakistan 38% of children were stunted, 8% wasting and 23% were underweight (M. R. K. Chowdhury et al., 2016; Naz et al., 2020).

In 2019, the highest overweight prevalence with 11.0% affected are the Middle East and North Africa, followed by 10.8 percent in Eastern Europe and Central Asia, and 8.9 percent in North America (Unicef, 2020). The lowest prevalence of overweight in 2019 was 2.5 percent in South Asia, followed by 2.6 percent in West and Central Africa (Unicef, 2020). The largest number of overweight children in 2019 is 10.4 million in East Asia and the Pacific, followed by an estimated 5.4 million overweight children in the Middle East and North Africa (Unicef, 2020). In general, the two regions of Asia (East Asia and the Pacific and South Asia) account for almost two out of every five children in the world who are overweight (Unicef, 2020). Numerous factors contribute to malnutrition during childhood. Previous studies stated that factors that lead to malnutrition are age, gender, maternal age, the total number of children, parents' education, and household income (Chowdhury et al., 2016; S. Hossain et al., 2020; Naz et al., 2020).

Sociodemographic characteristics play an important role in determining children's weight status. For instance, families with a high household income may provide healthy and nutritious food to their children. This will lead to better health status and children's growth is consistent according to their age. In contrast, children with a lower family income have a risk of having a nutritional issue. Meanwhile, a study conducted in Korea showed that childhood obesity among children aged 2 to 6 years was associated with monthly family income (Lee et al., 2020).

Children birth weight might also have a significant association with children's weight status during preschool age. Children who have a low birth weight tend to become underweight at later ages compared to children with normal birth weight. Similarly, children with high birth weight may have the risk of having a weight problem in the future. A study found that children with birth weight less than 2.50 kg had a higher risk of stunting, wasting and underweight (Woldeamanuel & Tesfaye, 2019). This study also stated that low birth weight might be one of the reasons why children were associated with a range of adverse outcomes during their first childhood life. Therefore, early intervention and treatment are important for low birth weight children to improve their health outcomes in later life.

Other factors that may affect children weight status are behavioral factors such as eating behavior and sleeping habits. Children tend to eat food that they like and refuse to eat if they are served with the food they do not like such as vegetables and fruit. This attitude may lead children to become a picky eater and affect their weight status. On the other hand, sleeping habits also influence children weight status mainly if the children have a shorter sleep duration at night. Shorter sleep at night among young children could increase the risk of being overweight and obese (Ward et al., 2020).

## **1.2 Problem Statement**

The cognitive, motor, psychosocial and affective development of a child can be impaired by malnutrition and poor health in the early years of life (Lian et al., 2012). There are differences in the prevalence of malnutrition in Asia mainly among countries, study population ages, gender, population settings, method and measurement to assess malnutrition. The prevalence of undernutrition among children under 5 years in Malaysia increases with underweight 14.1%, stunting 21.8% and wasting 9.1% compared to the previous National Health and Morbidity Survey

2015 (NHMS 2015) where underweight was 12.4%, stunting 17.7% and wasting 8.1% (National Institute of Health (NIH)/ Ministry of Health Malaysia, 2019).

It is critical to identify the pattern of early childhood nutritional status including both undernutrition and overnutrition for the prevention of nutrition-related chronic diseases (Yan et al., 2018). The double burden of malnutrition is the combination of undernutrition and overnutrition that has been recorded globally (Black et al., 2013; Tzioumis & Adair, 2014). The co-existence of child undernutrition and maternal overweight or obesity could occur at the household level and it may also be caused by differences in the environment setting (Shinsugi Id et al., 2019). A double burden is thought to occur at the household level if a household comprises of a stunted child and overweight or obese mother (Oddo et al., 2012; Roemling & Qaim, 2013). South-East Asia and the Pacific have almost half of the world's population experiencing high stunting and high overweight concurrently, and in this region, female overweight rates have risen faster than in any other region in the past 30 years (Haddad et al., 2015). In the case of undernutrition, 45% of all child deaths under the age of 5 years are due to stunting (Black et al., 2013).

Childhood obesity results in many medical and psychosocial health issues in children such as hypertension, T2DM, metabolic syndrome, and hypercholesterolemia (N. Gupta et al., 2012). Besides, obesity is closely correlated with insulin resistance, which leads to the production of overt T2DM when combined with relative insulin deficiency (Hannon et al., 2005). Research highlights the vital urgency of early detection and intervention of childhood obesity in high-risk populations with type 2 diabetes in order to prevent long-term health implications (Young et al., 2000). The need for effective approaches begins as early as preschool to reverse predicted patterns is

evidenced by a high prevalence of overweight and obesity in preschool children (N. Gupta et al., 2012).

It is important to identify factors affecting children's weight status to prevent the occurrence of other health complications in their late life. There are limited local studies on weight status among preschool children as there are only two studies that were found conducted in a local setting which are Kelantan and Terengganu. These two studies only focused on sociodemographic characteristics, household food security status and child's dietary intake but there is no study conducted research on the behavioral factors. Moreover, a lot of studies discussed the prevalence of underweight, wasting, stunting, overweight and obesity, but they are limited only to those low-income developing countries. Therefore, this study needs to be conducted to fill the study gap by assessing weight status and its associated factors among preschool children.

### **1.3 Research Question**

As there is limited weight status assessment data and its related factors among preschool children, this study triggers the determination of the answers to these issues.

1. What is the weight status of preschool children in Johor?
2. What is the association of sociodemographic, maternal characteristic, child birth weight and behavioral factors with weight status among preschool children in Johor?

### **1.4 Significance of Study**

This study aims to determine the association of sociodemographic, maternal characteristic, child birth weight and behavioral factors with weight status among preschool children in Johor. Young children are one of the groups that have a risk of malnutrition, especially undernutrition. Malnutrition can lead to the development of diseases and chronic health issues such as obesity,

heart disease and diabetes. This study may enhance understanding of malnutrition by identifying the potential factors that contribute to undernutrition and overnutrition.

This study was conducted to determine the factors that may influence preschool children's weight status. There is still a lack of studies on the weight status of preschool children in Malaysia. The findings of this study may be able to fill the research gap in terms of children's behavioral factors and the associated factors with weight status among preschool children. These data are important and can provide health-related policies to create strategic interventions and improve public health especially for designing an intervention to improve the nutritional status of young preschool children in Malaysia.

## **1.5 Research Objectives**

### **1.5.1 General Objective**

To determine the association of sociodemographic, maternal characteristic, child birth weight and behavioral factors with weight status among preschool children in Johor.

### **1.5.2 Specific Objectives**

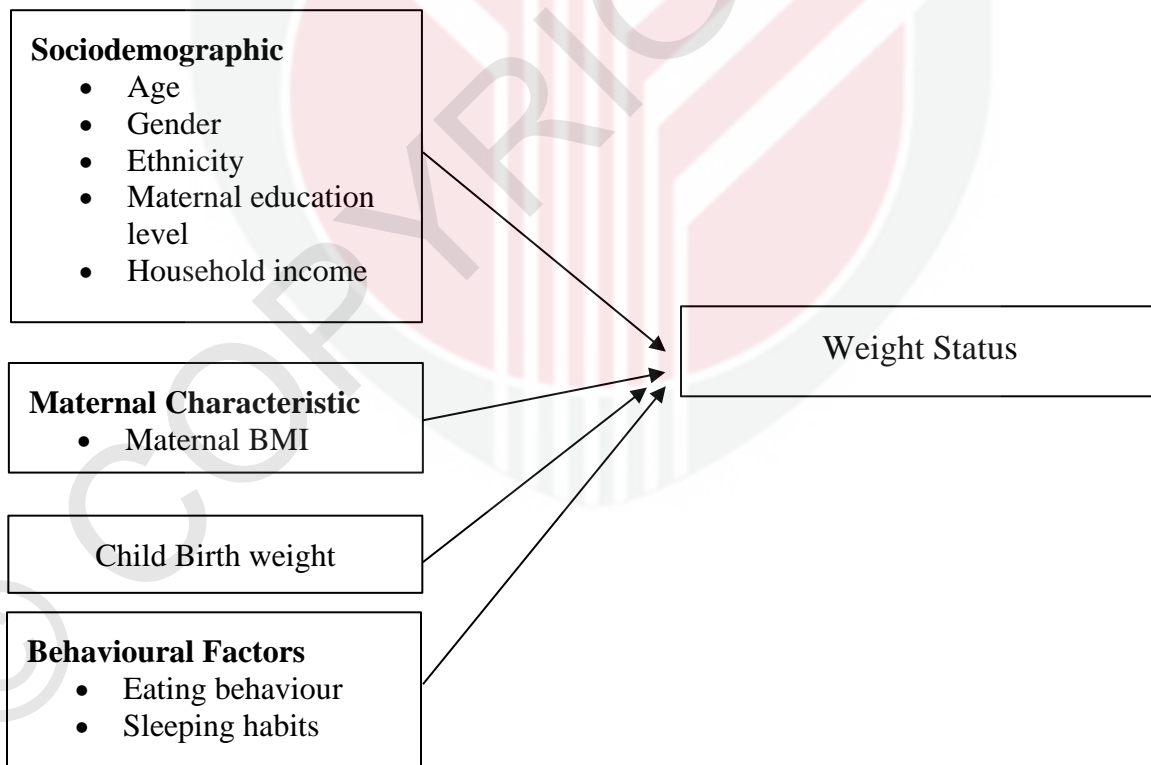
1. To determine the sociodemographic (age, gender, ethnicity, maternal education level and household income), maternal characteristic (maternal BMI), child birth weight and behavioural factors (eating behaviour and sleeping habits) among preschool children.
2. To determine weight status among preschool children.
3. To assess the associations between sociodemographic, maternal characteristic, child birth weight and behavioral factors with weight status among preschool children.

## 1.6 Research Hypothesis

There is a significant association between sociodemographic, maternal characteristic, child birth weight and behavioral factors with weight status among preschool children.

## 1.7 Research Conceptual Framework

The conceptual framework below demonstrates the association between weight status and sociodemographic, maternal characteristic, child birth weight and behavioral factors among preschool children in Johor. The independent variables are sociodemographic, maternal characteristic, child birth weight and behavioral factors. This study dependent variable is weight status among preschool children.



**Figure 1.1: Conceptual framework of the study**

## **CHAPTER 2**

### **Literature Review**

#### **2.1 Preschoolers Weight Status**

South Asia, with the largest number of stunted, wasting and underweight children in the world, has been recognized as the global malnutrition hotspot (Harding et al., 2018; S. Khan et al., 2019). Universally, the weight status of children is categorized into several categories, which are stunting, wasting and underweight (de Onis & Blössner, 2003). Stunting is used as a chronic undernutrition indicator, wasting as an acute undernutrition indicator, and underweight as a composite indicator that describes both chronic and acute undernutrition (Marriott et al., 2010). Though the word malnutrition is often used conversely with undernutrition that typically refers to low nutritional status, the other side of the nutritional continuum is characterized by excess nutrition, which often denotes deviation from optimum nutritional status (Mastorci et al., 2017; Ngaruiya et al., 2017).

Overweight in children is associated with the risk of obesity in adulthood and poor cardio-metabolic performance, which can have a significant impact on health and economic status (Baird et al., 2005). Long-term trends study on the prevalence of wastage, stunting, overweight, and obesity among preschool children is scarce as compared to school-aged children (Firouzi et al., 2014; Magriplis et al., 2019; Zhang et al., 2015). Undernutrition and poor health status among children may influence their cognitive, motor, psychosocial and affective development of a child (Lian et al., 2012).

## 2.2 Factors Associated with Weight Status

### 2.2.1 Sociodemographic Characteristics

Sociodemographic characteristics which include age, gender, maternal education, household income, and ethnicity can be associated with children nutritional status. The increasing age is one of the risks of being malnourished among children (Chowdhury et al., 2016). They found that the prevalence of malnutrition was significantly higher in older age groups (12-23 months, 36-47 months, and 48-59 months) and lower in younger age groups (0-11 months). A study in India stated that children aged 6-23 months and 24-59 were stunting and wasting respectively due to lower socioeconomic class (S. Chowdhury & Chakraborty, 2017). The result was in line with a study conducted by Melese et al. (2020) whereby children from the low socioeconomic class were prone to be wasted. A study in Sri Lanka showed that higher rates of underweight and stunting are significant among preschool female children than males in the community (Galgamuwa et al., 2017). The prevalence of wasting and underweight was higher in female children while stunting was higher among male children (Melese et al., 2020). Female children were underweight with a prevalence of 9.4% while male had a more distinguished prevalence of overweight and obesity with 8.2% and 1.9%, respectively (Rathnayake et al., 2013).

Children of educated mothers have a lower rate of malnutrition (Sen et al., 2011). According to Karku (2019), underweight and stunting among children were correlated with maternal education. The study stated that educated mothers invest not only in education and health but also in providing good quality food ingredients, which later improved the nutritional status of their children. Besides that, they also found that underweight and wasted were significant among Muslim children compared to other religions. The finding is supported by other studies where undernutrition in Muslim and Hindu children is higher than in Christian children (Sen et al., 2011).

The reason behind this might be that the Christians had already improved their health status to a satisfactory level (Sen et al., 2011).

### **2.2.2 Maternal Characteristic**

#### **Maternal BMI**

Maternal BMI was a notable factor of overweight and obesity among under five children (Bishwajit & Yaya, 2020). There is a study that shows the highest percentages of moderate and severe wasting in children associated with mothers who had a low BMI ( $\leq 18.50$ ) (Rahman et al., 2020). Children had a higher risk of being overweight or obese at preschool age for those who were born to obese mothers (Rathnayake et al., 2013). Besides that, a study conducted by (Das & Gulshan, 2017) found that maternal BMI has a negative association with child malnutrition. They point out that the importance of maternal nutritional status needs to be emphasized in the policies in reducing child malnutrition. The nutritional status of maternals has significant consequences for their children's health whereby children are vulnerable to be healthy when the maternal has a good nutritional status (R. Khan & Raza, 2014).

### **2.2.3 Child Birth Weight**

Child nutritional status is also associated with birth weight. According to Valente et al. (2016), children with normal birth weight had a significantly lower risk for both acute and chronic undernutrition which indicated the importance of nutrition intervention during an earlier stage of pregnancy. A study in Bangladesh found that children had a higher chance of being moderately or severely wasted in children who had a smaller size at birth (Rahman et al., 2020). Children with birth weight less than 2.5 kg had a greater risk of stunting, wasting, and underweight (Woldeamanuel & Tesfaye, 2019). Furthermore, children with low birth weight also had a higher

risk of childhood malnutrition, morbidity, and mortality (Fuchs et al., 2014). Low birth weight also enhances the risk of children to remain undernourished in their early childhood (Ntenda, 2019).

## **2.2.4 Behavioral Factors**

### **2.2.4.1 Eating Behavior**

Eating behavior and the ways children engage in food will determine the reasons for body weight variation in children (Webber et al., 2010). Children with different weight status had significant differences in food responsiveness, emotional overeating, food enjoyment, satiety responsiveness, slowness in eating, and food fussiness (Spence et al., 2011). A greater food approach behavior and lower food avoidant behaviors can be seen among overweight children compared with underweight or normal weight children. They also found that the overweight group of children have lower satiety responsiveness, slowness in eating scores and lower food fussiness. Child weight status may be influenced by emotional overeating through increased caloric consumption due to stress (Power et al., 2020).

Past literature identified that children's BMI and dietary intake are related to either under consuming or over consuming some food group as young as 4.5 years old (Dubois et al., 2007). They found that fruit, vegetable, meat and alternatives were consumed in a little amount among picky eaters whereas more grain products, meat and alternatives were consumed among overeaters. This is supported by a study in Sri Lanka that showed most preschoolers consume an inadequate amount of fruits and vegetables, and more than one-third consume excessive sugary snacks (Sirasa et al., 2020).

#### **2.2.4.2 Sleeping Habit**

Sleep duration is one of the major changeable risk factors for childhood overweight and obesity development (Ruan et al., 2015; Tatone-Tokuda et al., 2012). Several meta-analyses have found a correlation between short periods of sleep and an increased risk of childhood obesity (Pattinson et al., 2018; Ruan et al., 2015). The potential explanation of the association between sleep duration and the risk of obesity/overweight is because of sleep has an impact on the sympathetic nervous system and hypothalamic hormones which influence appetite regulation (Ruan et al., 2015). Besides, sleep deprivation reduced thyroid-stimulating hormone (TSH) which leads to reduced energy expenditure and reducing basal metabolic rate (Ruan et al., 2015). Sleep restriction also potentially increases waking hours that cause weight gain as an individual have the opportunities to eat more high energy dense food (Ruan et al., 2015).

Pattinson et al. (2018) stated that night sleep duration was the only sleep parameter significantly correlated with the BMI z-score. This is consistent with a previous study which found a significant association between shorter night-time sleep duration and higher BMI z-score (Scharf & Deboer, 2015). The study also showed that there were no significant associations between any of the sleep parameters and the BMI z score among girls. In comparison, the sleep duration and napping frequency of boys were significantly linked to the BMI z-score. Boys had significantly shorter night sleep duration and earlier sleep times than girls. Duration of night sleep and other parameters of sleep can be affected by social environmental factors such as differences in parental control with subsequent effects on weight status (Pattinson et al., 2018).

A similar result was found by Tatone-Tokuda et al. (2012), where sex differences in the association between sleep duration, diet, and body mass index. A clear inverse relationship could be seen between longitudinal sleep duration in boys, but there is no substantial correlation in girls,

although the prevalence of overweight or obesity was equivalent across both sexes. Only boys were associated with shorter longitudinal sleep duration and unhealthy eating habits at the age of 6 years old. In both sexes, 'short-persistent/increasing' sleep patterns were significantly correlated to lower vegetable and fruit frequencies at the age of 6 years compared to children who retained a '10-h persistent' or '11-h persistent' pattern (Tatone-Tokuda et al., 2012).

Meanwhile, a study by Ward et al. (2020) had found that deprived sleep is frequently related to poor nutritional performance. Children under the age of five have a higher risk of being overweight and obese among those who sleep less than 10 hours per night, indicating a correlation between sleep and diet. Higher intakes of vegetables, fruits and a lower intake of processed fast foods are associated with better sleep performance. When healthy lifestyle practices such as healthy eating behaviors and daily physical activity are practiced early, future health risks and health status can be persistently predicted.

## CHAPTER 3

### Methodology

#### 3.1 Study Design

This was a cross-sectional study that aimed to investigate the associations of sociodemographic, maternal characteristic, child birth weight and behavioral factors with weight status among preschool children in Johor.

#### 3.2 Study Location

The study was carried out at Preschools in Kota Tinggi, Johor. Kota Tinggi is one of the districts in Johor and the total population is made up of Malays (146,380), Chinese (18,817), Indian (5,592) and other ethnic groups. Kota Tinggi is located about 40 kilometers from the state capital, Johor Bahru. It is situated in the south of Peninsular Malaysia with an area of 3,500 square miles and it is the largest district in Johor. The major economic activities in this district include farmers (Felda settlers), farmers, fishermen and industrial workers; others are government servants or work for private companies.

#### 3.3 Sample Size Determination

The sample size calculation was determined using a correlation sample size formula. The formula was derived from Cole et al (1997) as outlined below.

Correlation Sample Size

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2}{r^2/(1-r^2)} + 5$$

Where

$N$  = the calculated sample size

$z_{1-\alpha/2}$  = z score for level of significance in two-sided test

$z_{1-\beta}$  = z score for the power of the test

$r$  = correlation

**Table 3.1: Calculation of sample size based on relevant studies**

Independent Variables		Correlation, $r$	Sample size, $n$
<b>Sociodemographic Factors</b> Age	Double burden of maternal and child malnutrition and socioeconomic status in urban Sri Lanka (Shinsugi Id et al., 2019)	$r = 0.51$	$n = \frac{(1.96 + 0.84)^2}{(0.51)^2 / (1 - (0.51)^2)} + 5$ $n = 27$
<b>Maternal Characteristic</b> Maternal BMI	Obesity risk in Hispanic children: Bidirectional associations between child eating behavior and child weight	$r = 0.43$	$n = \frac{(1.96 + 0.84)^2}{(0.43)^2 / (1 - (0.43)^2)} + 5$ $n = 40$

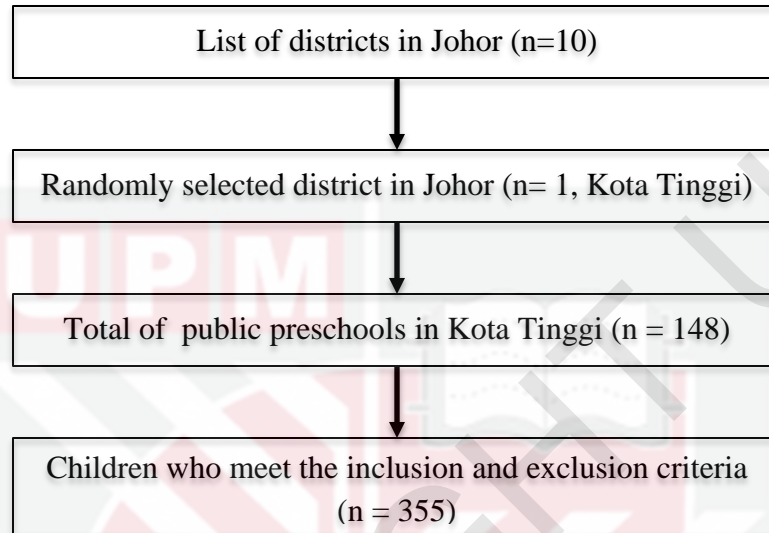
	status over time (Power et al., 2020)		
<b>Behavioral Factors</b>  Eating behaviour	Children's eating behavior, feeding practices of parents and weight problems in early childhood: results from the population-based Generation R Study  (Jansen et al., 2012)	r = 0.155	$n = \frac{(1.96 + 0.84)^2}{(0.155)^2 / (1 - (0.155)^2)} + 5$ $n = 323$

By comparing the sample size from other studies, the highest sample sizes come from the study between eating behavior and weight status among preschool children. The highest number of sample size selected is 323. An additional 10% was added to estimate sample size to account for non-response or any other errors. By considering the estimated response rate, the most appropriate sample size for this study was 355.

### 3.4 Sampling Design

The sampling design used in this study is the probability sampling method. The participants for this study were chosen using cluster sampling. There are a total of 10 districts in Johor and one of the districts was randomly selected, which is Kota Tinggi district.

The list of public preschools in Kota Tinggi was obtained from the MyGovernment Portal and Community Development Department websites. Then, all preschool children in the district that achieved the inclusion and exclusion criteria were chosen as the study sample in this study.



**Figure 3.1: Flow chart of the sampling method to select subjects**

### 3.5 Study Subjects

The subjects for this research were preschool children from Preschools in Kota Tinggi. However, with considerations of their inability to fill in the self-administered questionnaire on their own, the mother of the preschool children was entitled to fill in the questionnaire on their behalf. All subjects in this study were selected based on the inclusion and exclusion criteria.

**Table 3.2: Inclusion and exclusion criteria of the study subjects**

Inclusion Criteria	Exclusion Criteria
a) Malaysian	a) Children with physical disabilities
b) Children aged 4-6 years	or limitation such as handicapped
c) Male and female children	children
d) Mothers are the caregivers of the children	

### **3.6 Study Instruments**

A self-administrated questionnaire was used in this study. The questionnaire consists of sociodemographic characteristics, anthropometry characteristics, Child Eating Behaviour Questionnaire (CEBQ) and The Children's Sleep Habit Questionnaire (CSHQ). The descriptions of each study instrument that was used in this study are listed below.

#### **3.6.1 Sociodemographic Characteristics**

The self-administrated questionnaire on sociodemographic includes age, gender, ethnicity, parents education status and household income. Besides, the maternal contact number and email information also collected in the questionnaire for further follow-up.

#### **3.6.2 Anthropometry Measurement**

Self-reported weight and height of maternal and maternal-reported weight and height of children was used for BMI ( $\text{kg}/\text{m}^2$ ) calculations. The respondents were provided with an instruction video to measure weight correctly in the *Google Form* and the precaution steps to measure weight were emphasized in the video. Children's birth weight was also obtained through self-reports from maternal in the questionnaire.

##### **a) Maternal Body Mass Index (BMI)**

Body mass index (BMI) was calculated based on weight (kg) divided by height ( $\text{m}^2$ ). Then, BMI was categorized according to the healthy weight range based on health risk.

**Table 3.3: Classification of Body Mass Index**

<b>Classification</b>	<b>BMI (kg/m<sup>2</sup>)</b>
Underweight	<18.5
Normal weight	18.5 – 24.9
Overweight	25.0 – 29.9
Obese (Class I)	30.0 – 34.9
Obese (ClassII)	35.0 – 39.9
Extremely Obese (Class III)	≥40

Source: World Health Organization (2016)

**b) Children Nutritional Status**

The nutritional status of 4-6 years of children was defined using the World Health Organization Growth Standard 2006 and World Health Organization Growth Reference 2007. The z-scores for BMI-for-age were derived using the WHO Anthroplus Software. Children aged 4-5 years with BMI z-score greater than 2SD are considered as overweight and those greater than 3SD are considered as obese. For children aged 6 years, those who have BMI z-score greater than 1SD are considered as overweight and they are considered as obese if they have a BMI z-score greater than 2SD.

**Table 3.4: Classification of anthropometric indicators**

<b>Z-score</b>	<b>BMI-for-age</b>	
	<b>Children aged 4-5 years</b>	<b>Children aged 6 years</b>
< -3SD	Severely wasted	Severe thinness
$\geq -3SD$ to < -2SD	Wasted	Thinness
$\geq -2SD$ to $\leq +1SD$	Normal	Normal
> +1SD to $\leq +2SD$	Possible risk of overweight	Overweight
> +2SD to $\leq +3SD$	Overweight	Obese
> +3SD	Obese	Severely obese

Source: World Health Organization Growth Standard (2006) and World Health Organization Growth Reference (2007).

### **3.6.3 Child Eating Behaviour Questionnaire (CEBQ)**

The Children's Eating Behaviour Questionnaire (CEBQ) is one of the most detailed tools to assess children's eating behavior. The CEBQ questionnaires were completed by mothers to assess their children's eating behavior. The CEBQ is a detailed evaluation method focused on 35 unique questions consisted of four dimensions indicating "food approach" (enjoyment of food, food responsiveness, emotional overeating, and desire to drink) and four dimensions measuring "food avoidant" (satiety responsiveness, slowness in eating, emotional under eating, and food fussiness) (Wardle et al., 2001). The CEBQ items are rated based on a five-point Likert scale (never, rarely, sometimes, often, always; 1–5). Internal reliability coefficients (Cronbach's alpha) for the dimension in CEBQ ranged from .74 to .91 (Wardle et al., 2001). In the present study, the internal reliability coefficient (Cronbach's alpha) was 0.85.

### **3.6.4 The Children's Sleep Habit Questionnaire (CSHQ)**

The Children's Sleep Habit Questionnaire (CSHQ) was used in the study, it is a retrospective, 33-choice screening tool intended for parents that have been used to research children's sleep activity (Owens et al., 2000). The internal consistency of the entire CSHQ for the community sample was 0.68 (Owens et al., 2000). Mothers had to record average sleep time for children on weekends and during a regular week as well as standard bedtime and wake-up time. The frequency of behaviors associated with sleep were graded as "usually" on a 3-point scale (5 to 7 times a week, scored as 3 points), "sometimes" (2 to 4 times a week, scored as 2 points) or "rarely" (0 to 1 time per week, scored as 1 point). The subscales were Bedtime Resistance (items 1, 3, 4, 5, 6 and 8), Sleep Onset Delay (item 2), Sleep Duration (items 9, 10 and 11), Sleep Anxiety (items 5, 7, 8 and 21), Night Wakings (items 16, 24 and 25), Parasomnias (items 12, 13, 14, 15, 17, 22 and 23), Sleep-Disordered Breathing (items 18, 19 and 20) and Daytime Sleepiness (items 26, 27, 28, 29, 30, 31, 32 and 33). Owen et. al., (2000) stated that the total scores of CHSQ ranged from 6 to 83 in the community sample. The total CHSQ scores appear to be scored higher among children with behavioral sleep problems due to the development of subscales that were weighted towards things related to sleep initiation and maintenance issues. Since there were no cutoffs for each subscale, children with scores over 41 points were considered to indicate sleep problems (S. Lee et al., 2019).

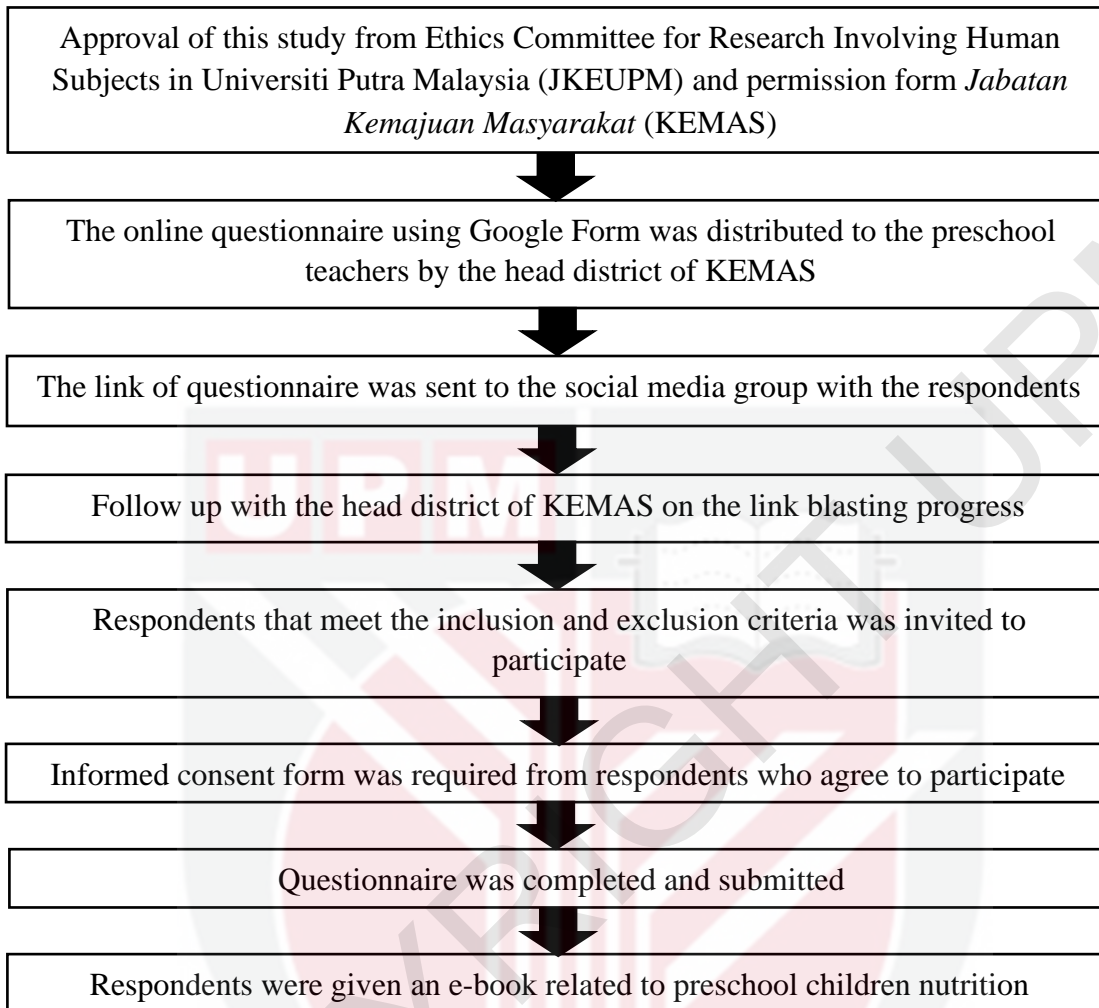
### **3.7 Pre-Testing**

A group of subjects consisting of 36 (10%) maternal of preschool children from a selected preschool in Kota Tinggi with similar characteristics as the study sample and fulfill the inclusion and exclusion criteria of this study were recruited as respondents. The purpose of pre-testing is to analyze the clarity, meaning and cultural sensitivity of the questionnaire used in the study. The

time taken to answer the questionnaire was recorded and verified through this pre-testing. Subjects who participated in the pre-testing were not included in the study sample. Feedback from subjects after a pre-testing was considered in identifying any errors and problems associated with the questionnaire. Then, the questionnaire was altered and reassessed after the pre-testing before conducting the actual research.

### **3.8 Data Collection**

This study was conducted via an online questionnaire using Google Form from March 2021 to the end of April 2021. There was no direct contact with the respondents who participated in this study. Maternal and children who meet the study inclusion and exclusion criteria were recruited in the study. Informed consent was given to the mothers after they agreed to be involved in this research. There were few sections in the questionnaire which were used to assess their sociodemographic characteristics, maternal characteristic, child birth weight, behavioral factors and weight status. In this study, there were 372 preschool children who had fulfilled the study criteria participated in the study through an online questionnaire (Google Form) answered by the maternal.



**Figure 3.2: Flow chart of the data collection**

### 3.9 Study Approval

Ethical approval to conduct this study was obtained from the Ethics Committee for Research Involving Human Subjects in Universiti Putra Malaysia (JKEUPM) and permission from *Jabatan Kemajuan Masyarakat* (KEMAS) prior to the start of conducting data collection. An informed consent letter and the self-administered questionnaire in Malay, English and Mandarin version was approved by JKEUPM and KEMAS before distributing to respondents involved in the study.

### 3.10 Data Analysis

The data collected were analysed using IBM SPSS Statistics Version 25 with the significance level set at  $p < 0.05$  and a normality test was conducted to check the normality of the data. To test the objectives highlighted in this study, several statistical tests were used. First, the univariate analysis was used for descriptive data where categorical variables were presented in frequency and percentage, while continuous variables were presented in mean and standard deviation. Second, the bivariate analysis was used to determine the association between the categorical variables using the Chi-square Test and the correlation for the continuous variables were tested using Pearson's Product-Moment Correlation.

Pearson Product Moment Correlation was used to determine the association between age, household income level, maternal BMI, child birth weight, eating behaviour and sleeping habits with weight status among preschool children. Meanwhile, the association between gender, maternal educational level and weight status were tested with Chi-square test.

## CHAPTER 4

### Results and Discussion

#### 4.1 Sociodemographic Characteristics

Table 4.1 below shows the sociodemographic characteristics of the children and maternals. The age range of the children in this study was 4 to 6 years with a mean age of  $5.19 \pm 0.65$  years. Among the respondents, 49.5% were boys and 50.5% were girls.

The majority of the subjects were Malay (98.9%) and non-Malay (1.1%). Based on the maternal educational level of the subjects, most of them had obtained their education until secondary level (64.5%), while 32.8% and 2.4% of subjects received tertiary education and primary education respectively, with only 0.3% of children's mothers not receiving any formal education.

Based on the total household income, the majority of the subjects come from B40 (84.4%), M40 (14.5%) and only 1.1% were from the T20 group. Meanwhile, the mean for total household income was  $RM\ 3113.78 \pm 4131.48$ .

**Table 4.1: Sociodemographic characteristics of the children and maternals (n=372)**

Variables	n (%)	Mean $\pm$ SD
<b>Age</b>		$5.19 \pm 0.65$
4 years old	49 (13.2)	
5 years old	205 (55.1)	
6 years old	118 (31.7)	
<b>Gender</b>		
Boy	184 (49.5)	
Girl	188 (50.5)	
<b>Ethnicity</b>		
Malay	368 (98.9)	
Non-malay	4 (1.1)	
<b>Maternal Education Level</b>		
No formal education	1 (0.3)	
Primary education	9 (2.4)	
Secondary education	240 (64.5)	

**Table 4.1: Sociodemographic characteristics of the children and maternals (n=372) (cont.)**

Variables	n (%)	Mean ± SD
Tertiary education	122 (32.8)	
<b>Household Income *</b>		3113.78 ± 4131.48
Less than RM 4850 (B40)	314 (84.4)	
RM 4851 to RM 10970 (M40)	54 (14.5)	
More than RM 10971 (T20)	4 (1.1)	

\* Based on Department of Statistic Malaysia (DOSM)

## 4.2 Maternal Characteristic

### 4.2.1 Maternal BMI

According to Table 4.2, the mean BMI for all mothers was  $26.34 \pm 5.37$  kg/m<sup>2</sup> with a range value of 13.72 – 42.15 kg/m<sup>2</sup>. In terms of BMI, 158 (42.5%) out of 372 mothers falls within the normal BMI category whereas 28.0% of mothers were overweight, 25% were obese and 4.6% were underweight.

**Table 4.2: Maternal BMI (n=372)**

Variables	n (%)	Mean ± SD	Range
<b>BMI (kg/m<sup>2</sup>)</b>		$26.34 \pm 5.37$	13.72 – 42.15
Underweight	17 (4.6)		
Normal	158 (42.5)		
Overweight	104 (28.0)		
Obese (Class I)	70 (18.8)		
Obese (Class II)	14 (3.8)		
Extremely Obese (Class II)	9 (2.4)		

BMI: Body Mass Index

### 4.3 Child Birth Weight

As reported in Table 4.3, most of the child birth weights were appropriate for gestational age (85.8%), while 11.8% and 2.4% of the children were small for gestational age and large for gestational age respectively. The mean child birth weight for all children was  $3.02 \pm 0.52$ .

**Table 4.3: Child Birth Weight (n=372)**

<b>Variables</b>	<b>n (%)</b>	<b>Mean ± SD</b>	<b>Range</b>
Childbirth Weight/ Gestational Age		3.02 ± 0.52	0.93 – 4.52
SGA	44 (11.8)		
AGA	319 (85.8)		
LGA	9 (2.4)		

SGA: Small Gestational Age, AGA: Appropriate Gestational Age, LGA: Large Gestational Age

#### 4.4 Behavioural Factors

##### 4.4.1 Eating Behaviour

Table 4.4 shows the distribution of the score for each subscale in the Child Eating Behavior Questionnaire (CEBQ). The mean score for each of the enjoyment of food, desire to drink, satiety responsiveness, slowness in eating, food fussiness, emotional under-eating, food responsiveness and emotional overeating are  $3.16 \pm 0.67$ ,  $2.89 \pm 0.84$ ,  $2.80 \pm 0.55$ ,  $2.79 \pm 0.61$ ,  $2.79 \pm 0.55$ ,  $2.43 \pm 0.70$ ,  $2.33 \pm 0.68$  and  $1.88 \pm 0.70$  respectively. The enjoyment of food subscale has the highest mean score ( $3.16 \pm 0.67$ ) and the lowest mean score is found in the emotional over-eating subscale ( $1.88 \pm 0.70$ ).

For the first subscale which is the enjoyment of food, almost half of the children (45.4%) found “often” loves food and 48.1% of the children are “sometimes” interested in food. Next, in terms of desire to drink, the mean score falls between “never” and “sometimes”. There were 49.2% of the children are found “often” to always be asking for a drink. Besides, around one-third of the children (34.4%) are “sometimes” always having a drink if given the chance.

The mean score for satiety responsiveness is found to be ranging between “never” and “sometimes” where half of the children (51.3%) “sometimes” get full before their meal is finished. In addition, almost half of the children (44.6%) are found “sometimes” leave food on his or her plate at the end of a meal and get full up easily. On the other hand, the slowness in eating is ranging between “never” to “sometimes” among preschool children. One-third of the children (35.5%) is

found “sometimes” takes more than 30 minutes to finish a meal and eats more and more slowly during the course of a meal.

The next subscale is food fussiness which also ranging between “never” and “sometimes”. Half of the children (50.8%) were “sometimes” refuse new foods at first. Similarly, around half of the children were “sometimes” enjoy a wide variety of foods (49.7%) and enjoy tasting new foods (46.5%). The emotional under-eating among preschool children is ranging between “never” and “sometimes” where it is found that almost half of the children (44.9%) “sometimes” eat less when he or she is tired and eats more when she is happy. In addition, 43.5% of the children are found “never” to eats less when upset. Furthermore, children have a range of “never” to “sometimes” in terms of food responsiveness as half of the children (48.9%) would “never” eat most of the time and only a small percentage (1.3%) eat too much if it is allowed by the parents. Lastly, the emotional-over-eating of the children ranging between never to rarely which has the lowest mean score found that 63.3% of the children “never” eat more when anxious.

**Table 4.4: Child Eating Behaviour Questionnaire (CEBQ) Subscales**

<b>Subscales</b>	<b>Mean ± SD</b>	<b>Range</b>
Enjoyment of Food	3.16 ± 0.67	1.25-5.00
Desire to Drink	2.89 ± 0.84	1.33-5.00
Satiety Responsiveness	2.80 ± 0.55	1.20-4.80
Slowness In Eating	2.79 ± 0.61	1.25-5.00
Food Fussiness	2.79 ± 0.55	1.17-4.83
Emotional Under-eating	2.43 ± 0.70	1.00-4.00
Food Responsiveness	2.33 ± 0.68	1.00-4.80
Emotional Overeating	1.88 ± 0.70	1.00-3.75

#### 4.4.2 Sleeping Habit

Children's sleeping habit was assessed by using the CSHQ where children with a score higher than 41 indicate to have a poor sleep quality.

Based on Table 4.5, the total mean score for the sleeping habit of preschool children in this study is  $52.58 \pm 9.28$ . This revealed that preschool children have a poor sleep quality. The mean score for bedtime resistance, sleep anxiety, daytime sleepiness, sleep onset delay, night wakings, sleep duration, parasomnias and sleep-disordered breathing are  $2.01 \pm 0.40$ ,  $1.85 \pm 0.49$ ,  $1.72 \pm 0.37$ ,  $1.70 \pm 0.68$ ,  $1.49 \pm 0.47$ ,  $1.46 \pm 0.42$ ,  $1.33 \pm 0.42$  and  $1.30 \pm 0.47$  respectively. Bedtime resistance has the highest mean score of  $2.01 \pm 0.40$  where 65.1% of the children rarely (0 to 1 time per week) struggles at bedtime. While the lowest mean score is the sleep-disordered breathing subscale  $1.30 \pm 0.47$ .

**Table 4.5: Child Sleeping Habit Questionnaire (CSHQ) Subscales**

<b>Subscales</b>	<b>Mean <math>\pm</math> SD</b>	<b>Range</b>
Bedtime Resistance	$2.01 \pm 0.40$	1.00-2.83
Sleep Anxiety	$1.85 \pm 0.49$	1.00-3.00
Daytime Sleepiness	$1.72 \pm 0.37$	1.00-2.75
Sleep Onset Delay	$1.70 \pm 0.68$	1.00-3.00
Night Wakings	$1.49 \pm 0.47$	1.00-3.00
Sleep Duration	$1.46 \pm 0.42$	1.00-3.00
Parasomnias	$1.33 \pm 0.42$	1.00-3.00
Sleep-disordered Breathing	$1.30 \pm 0.47$	1.00-3.00
<b>TOTAL SCORE</b>	<b><math>52.58 \pm 9.28</math></b>	<b>35.00-86.00</b>

#### 4.5 Weight Status Among Preschool Children (BMI-for-age-z-score)

According to Table 4.6, the mean weight (kg) of preschool children is  $17.10 \pm 4.15$ kg and  $17.92 \pm 4.45$ kg for boys and girls, respectively. The mean height (cm) was  $104.54 \pm 11.24$ cm for boys and  $106.43 \pm 9.48$ cm for girls. Based on the BMI-for-age classification, half of the children (51.3%) had normal BMI-for-age, followed by 30.6% of the children were overweight and obese, and 18.0% were wasted and thinness. Furthermore, it is found that the percentage of overweight and obese between boys (30.4%) and girls (30.9%) were similar. On top of that, 23.4% of the boys were wasted or thinness which was relatively higher than girls (12.8%).

**Table 4.6: Mean values for body weight status (BMI-for-age z-score)**

Variables	Mean $\pm$ SD		
	Boys (n=184)	Girls (n=188)	Total (n=372)
Body weight (kg)	$17.10 \pm 4.15$	$17.92 \pm 4.45$	$17.52 \pm 4.32$
Height (cm)	$104.54 \pm 11.24$	$106.43 \pm 9.48$	$105.50 \pm 10.42$
BMI-for-age z-score	$0.03 \pm 3.01$	$0.03 \pm 2.20$	$0.03 \pm 2.62$

BMI: Body Mass Index

**Table 4.7: Distribution of respondents based on the BMI-for-age classification**

BMI-for-age classification	n (%)		
	Boys (n=184)	Girls (n=188)	Total (n=372)
Wasted/ Thinness	43 (23.4)	24 (12.8)	67 (18.0)
Normal	85 (46.2)	106 (56.4)	191 (51.3)
Overweight/ Obese	56 (30.4)	58 (30.9)	114 (30.6)

#### 4.6 Factors Associated with Body Weight Status

##### 4.6.1 Association between sociodemographic characteristics with body weight status (BMI-for-age, BAZ)

Based on Table 4.8, there is no significant association ( $r=-0.027$ ,  $p=0.600$ ) found between children aged 4 to 6 years with body weight status. The result is contrary to a study conducted by A. Hossain et al. (2020) that observed age had a significant impact on children's weight status.

From Table 4.8, it is found that there was a significant association ( $X^2=7.690$ ,  $p=0.021$ ) between wasted and thinness with sociodemographic characteristics where the result revealed that boys were more likely to be wasted and thin than girls (23.4% vs 12.8%). A study conducted by Harding et al. (2018) has similar findings that wasting among children in Afghanistan, Bangladesh, India and Pakistan was higher in boys than girls. However, they stated that this finding contradicts past studies on malnutrition in South Asia where girls have a higher chance to be stunted or wasted than boys. The study on the association of gender with body weight status among preschool children is still limited. Hence, more study is needed to determine the association of gender with body weight status.

As shown in Table 4.8, no significant difference was found ( $X^2=2.172$ ,  $p=0.338$ ) between maternal's educational status and body weight status. The result is inconsistent with Amugsi et al., (2019) that found maternal education has a significant positive influence on children's healthy growth. In addition, there is a low possibility for children with an educated mother to be undernourished (Karku, 2019). The weight status of children can be improved when the mother with higher education has a good understanding of balanced dietary intake for the family members (A. Hossain et al., 2020).

Based on Table 4.8, the result found that there was no significant difference ( $r= -0.062$ ,  $p= 0.232$ ) between household income level and body weight status. This finding is consistent with a study by Shafqat et al. (2013) where there was no significant association between household income level with children's weight status. Families with high household incomes have no difficulties in providing better quality food and good health services for their children (Galgamuwa et al., 2017). A previous study by Galgamuwa et al. (2017) found that children in the lower income group were underweight compared to children in a high income group. However, they emphasize

that families with a low household income level are not the only factors that contribute to children's weight status as inadequate dietary intake, the environment and low educational status may lead to child malnutrition among low income groups (Galgamuwa et al., 2017).

**Table 4.8: Sociodemographic characteristics with body weight status BMI-for-age z-score**

Variables	BMI-for-age			r-value	p-value
	Wasted/ Thinness N (%)	Normal N (%)	Overweight /Obese N (%)	$\chi^2$	p-value
<b>Age of Children (years)</b>				-0.027	0.600
<b>Gender</b>				7.690	<b>0.021*</b>
Boy	43 (23.4)	85 (46.2)	56 (30.4)		
Girl	24 (12.8)	106 (56.4)	58 (30.9)		
<b>Maternal Educational Level</b>				2.172	0.338
Lower educational level	43 (17.2)	135 (54)	72 (28.8)		
Upper educational level	24 (19.7)	56 (45.9)	42 (34.4)		
<b>Household Income Level</b>				-0.062	0.232

\*significant value at  $p < 0.05$

#### 4.6.2 Association between maternal BMI with body weight status (BMI-for-age, BAZ)

According to Table 4.9, there was no significant association found between maternal BMI and BMI-for-age among preschool children ( $r = 0.083$ ,  $p = 0.111$ ). Nevertheless, the result is contraindicated with Bishwajit and Yaya, (2020) that distinguish a significant association between maternal BMI with children's weight status. They stated that improving maternal knowledge on nutrition, who is the primary caregiver, can give a positive impact on children's weight status. Children have a risk of being undernutrition if the mothers are malnourished (Lian et al., 2012). Similarly, maternal obesity was significantly associated with childhood overweight/obesity but there are also other potential factors that can influence the children's weight status (Chaput et al., 2006).

**Table 4.9: Maternal BMI with body weight status BMI-for-age z-score**

Variables	BMI-for-age z-score	
	r-value	p-value
Maternal BMI	0.083	0.111

BMI: Body Mass Index

#### 4.6.3 Association between child birth weight with body weight status (BMI-for-age, BAZ)

From Table 4.10, no association ( $r= 0.064$ ,  $p= 0.216$ ) found between child birth weight and body weight status. The finding is contraindicated with the study by Valente et al. (2016), where normal birthweight has a significant association with a lower risk of the undernourished problem compared to children born small for gestational age (SGA). They highlight the importance of nutrition intervention in the early stage of pregnancy and specifically monitor the newborns' SGA for any growth failure. Wong et al. (2014) stated that low birth weight was one of the risk factors of child malnutrition. On the other hand, a higher birth weight will give a good outcome of child weight status, and birth weight is affected by the condition and health of the mother (Lian et al., 2012). Moreover, the duration of breastfeeding during infancy is one of the significant factors associated with children's current weight status and influences the children's growth as exclusive breastfeeding is a necessary component in protecting the children from having malnutrition in childhood (R. Gupta et al., 2020). The local study on this issue is still limited, hence, further research needs to be done.

**Table 4.10: Child birth weight and body weight status BMI-for-age z-score**

Variables	BMI-for-age z-score	
	r-value	p-value
Child Birth Weight	0.064	0.216

#### **4.6.4 Association between behavioural factors with body weight status (BMI-for-age, BAZ)**

##### **4.6.4.1 Association between eating behaviour with body weight status (BMI-for-age, BAZ)**

Based on Table 4.11, there were no significant associations found between eating behaviour [food responsiveness ( $r = -0.014$ ,  $p = 0.782$ ), emotional overeating ( $r = -0.044$ ,  $p = 0.398$ ), enjoyment of food ( $r = 0.018$ ,  $p = 0.731$ ), satiety responsiveness ( $r = -0.074$ ,  $p = 0.154$ ), slowness in eating ( $r = -0.007$ ,  $p = 0.894$ ), emotional under-eating ( $r = 0.003$ ,  $p = 0.961$ ), food fussiness ( $r = 0.021$ ,  $p = 0.686$ )] and BMI-for-age among preschool children. However, one of the subscales in the Child's Eating Behaviour Questionnaire is found to be statistically significant where the desire to drink is negatively associated with the BMI-for-age ( $r = -0.110$ ,  $p = 0.034$ ).

The result counteracts a study conducted by Spence et al. (2011) as they found that there are no significant differences between the desire to drink and children's weight status. They affirmed that the desire to drink subscale association with weight status has been incompatible in past studies. The current finding is in line with a previous study that found a significant association between the desire to drink with weight status (Webber et al., 2009). This might be due to the availability of high energy drinks or an expression of yearning for something in the mouth such as caloric drinks or other specific preferences for higher calorie drinks (Webber et al., 2009). There is a lack of literature in this field and the mechanism of desire to drink with weight status warrants further research. Besides, the desire to drink subscale did not provide any indication of what type of drink is being desired and it is hard to investigate the relationship between the desire to drink and weight status (Spence et al., 2011). Another cause that influenced the association of increased thirst with weight status is the result of snacking savoury snacks that contain high salt and a recent study represents an association between salt, total fluid and sweet drinks ingestion in children aged

4 to 18 years old (Webber et al., 2009). This indicates that a child's desire to drink is correlated to craving sweet things in the mouth rather than being thirsty or hungry.

**Table 4.11: Child eating behaviour and BMI-for-age z-score**

Variables	BMI-for-age z-score	
	r-value	p-value
Food Responsiveness	-0.014	0.782
Emotional Overeating	-0.044	0.398
Enjoyment of Food	0.018	0.731
Desire to Drink	-0.110	<b>0.034*</b>
Satiety Responsiveness	-0.074	0.154
Slowness in Eating	-0.007	0.894
Emotional Under-Eating	0.003	0.961
Food Fussiness	0.021	0.686

\*significant value at  $p < 0.05$

#### 4.6.4.2 Association between sleeping habits with body weight status (BMI-for-age, BAZ)

According to Table 4.12, there were no significant associations found between bedtime resistance (BR) ( $r = 0.23$ ,  $p = 0.654$ ), sleep onset delay (SOD) ( $r = 0.053$ ,  $p = 0.304$ ), sleep duration (SD) ( $r = 0.034$ ,  $p = 0.509$ ), sleep anxiety (SA) ( $r = 0.037$ ,  $p = 0.475$ ), night wakings (NW) ( $r = 0.039$ ,  $p = 0.457$ ), parasomnias (P) ( $r = 0.093$ ,  $p = 0.074$ ), sleep-disordered breathing (SDB) ( $r = 0.090$ ,  $p = 0.084$ ), daytime sleepiness (DS) ( $r = 0.028$ ,  $p = 0.596$ ) and BMI-for-age. The finding was supported by a previous study which showed no significant association between sleeping habits and children's weight status (Boles et al., 2017). They suggested further research to be done by including a longitudinal and experimental method to analyze thoroughly the association between sleep behaviour problems and weight status at an early age. It is crucial to consider the impact of poor sleep as it increases the possibility of decreased memory and attention, and other emotional problems during childhood despite the non-significant relationship between poor sleep habits with children's weight status (Boles et al., 2017). Nonetheless, the current result contradicted with Firouzi et al. (2014) that found an association between sleep disorder and children's weight status.

Children with short sleep had a high risk of gaining weight and sleep duration is affected by age that is associated with children's BMI (Firouzi et al., 2014). Thus, age can be one of the underlying factors in establishing the relationship between sleep duration and children's weight status. A study by (Chaput et al., 2006) also found that short sleeping duration correlated with overweight and obesity. They emphasize that it is crucial to be aware of sleep duration as it is one of the potentially modifiable risk factors of children's weight status. Short sleeping duration indeed leads to the increment of body weight but children also probably experience difficulty getting enough sleep due to their overweight or obese condition and sleep disorder were found to be higher among those children (Firouzi et al., 2014). Other than that, lack of sleep or sleep deprivation causes an individual to be lethargic and sleepy for a whole day which reduces their physical activity and they might eat or drink high-energy foods and drinks to overcome the feeling of lethargy (Ruan et al., 2015). Therefore, sleep duration and sleep quality may lead to obesity.

**Table 4.12: Sleeping habit and BMI-for-age z-score**

Variables	BMI-for-age z-score	
	r-value	p-value
Bedtime Resistance	0.230	0.654
Sleep Onset Delay	0.053	0.304
Sleep Duration	0.034	0.509
Sleep Anxiety	0.037	0.475
Night Wakings	0.039	0.457
Parasomnias	0.093	0.074
Sleep-disordered Breathing	0.090	0.084
Daytime Sleepiness	0.028	0.596

## CHAPTER 5

### Conclusion, Limitation and Recommendation

#### 5.1 Conclusion

Children's growth needs to be monitored from an early age to ensure them growing normally and preventing them from any health problems at a later age. In the present study, it is found that 51.3% of the preschool children have normal BMI-for-age while the other 48.6% of them are wasted, thin, overweight and obese according to the BMI-for-age z-score from the World Health Organization Growth Standard 2006 and Growth Reference 2007. Also, the percentage of wasted and thinness is found to be higher among boys than girls. This study revealed that gender and desire to drink were associated with the weight status of preschool children. Thus, the determination of factors associated with children's weight status is necessary to develop effective interventions and reduce the risk of malnutrition.

#### 5.2 Limitation

There are several limitations that need to be considered when interpreting the results of the study. As an example, the anthropometry data of the respondents are self-reported by the maternal as the study was conducted online due to COVID-19 pandemic. However, in order to improve the quality of the data, a guideline video on how to measure weight was provided for the respondents to acquire the current weight. This is beneficial for those who have a weighing scale but the others who do not have a weighing scale rely on their memories. Similarly, the respondent's height reported was depending on their past height measurement.

In addition, dietary intake or food frequency questionnaire was not assessed in this study. Dietary intake or dietary pattern data was not obtained in the study to reduce the time taken in

answering the questionnaire and to ensure the respondents did not refuse to fill in and submit the questionnaire. Respondents may lose their interest to participate in this study if the questionnaire is lengthy and time-consuming. Nevertheless, data on dietary intake or dietary pattern are important to be assessed because it is the factor that greatly influences the children's weight status.

### **5.3 Recommendation**

Future studies are recommended to investigate the weight status among preschool children by collecting anthropometry data using standard equipment and procedures such as the TANITA digital weighing scale and SECA body meter in measuring height and weight. The body mass index (BMI) calculated using the data measured will be more accurate and reliable.

One of the important factors that contribute to weight status among preschool children is dietary intake. Study showed that picky eaters consumed less fruits, vegetables and meat, but excessive sugary snacks (Sirasa et al., 2020). Therefore, it is suggested for future study to include this factor. Besides, this factor is also important to support the finding of children's eating behaviour.

Further studies needed to be done to explore in-depth the factors associated with weight status and help to create more strategic intervention for weight problems. Therefore, weight status among preschool children can remain within optimal range.

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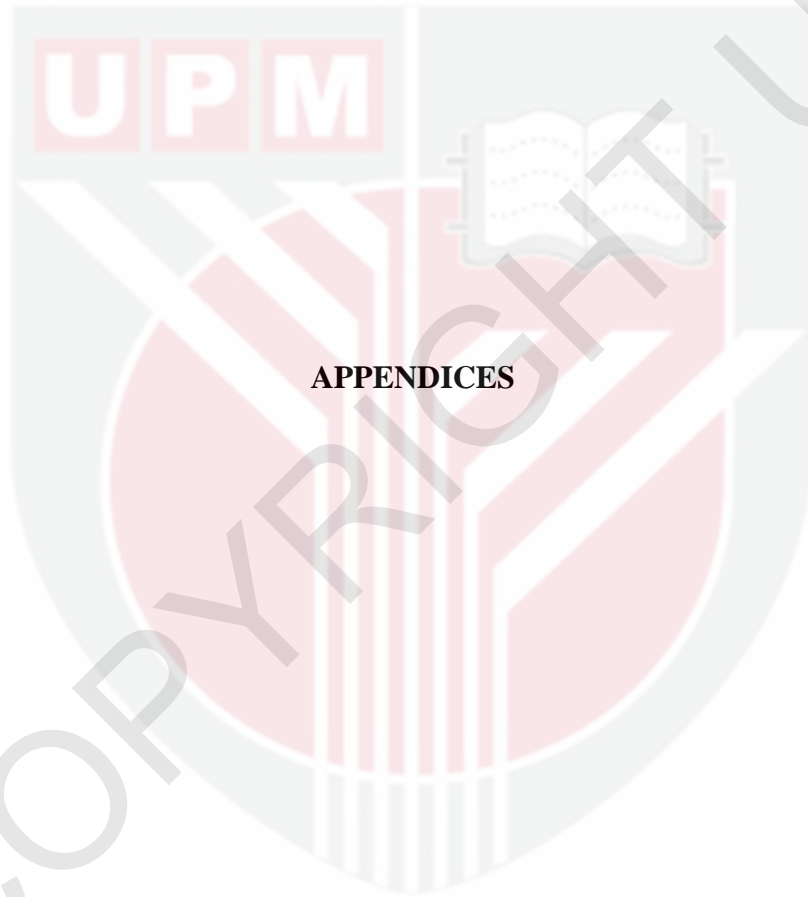
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**APPENDICES**

## Appendix A – Ethical Clearance from JKEUPM

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)

Date: 17 February 2021

Dear Prof./Dr./Mr./Ms.,

### **APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED**

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled 'Association of Socio-Demographic, Maternal, Behavioural and Home Environmental Factors and Picky Eating Behaviour Among Pre-School Children in Southern Region of Peninsular Malaysia' has been approved.

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (<http://www.tncpi.upm.edu.my/faiildokumen>).

If you have any enquiries, please contact Ms. Nurulhasanah Ishak (03-97691605) or Ms. Nor Ellia Abd Ajis (03-97691244).

Note: Please use this reference number for any transaction.

- JKEUPM-2020-509

Thank you.

Yours faithfully,

Prof. Dr. Zamberi Sekawi  
Chair  
Ethics Committee for Research Involving Human Subjects  
Universiti Putra Malaysia

## Appendix B – KEMAS Approval Letter



**IBU PEJABAT**  
**JABATAN KEMAJUAN MASYARAKAT (KEMAS)**  
**KEMENTERIAN PEMBANGUNAN LUAR BANDAR**  
Ara 5-9  
No. 47, Persiaran Perdana, Presint 4  
Pusat Pentadbiran Kerajaan Persekutuan  
62100 PUTRAJAYA



Telefon : 03-8891 2682  
Faks : 03-8889 2312  
Laman Web : [www.kemas.gov.my](http://www.kemas.gov.my)

Ruj.Kami : KEMAS BPAK 620-02/01/01 Jld 19 (3-4)  
Tarikh : // Januari 2021  
: ٢٧ Rabiulawal 1442H

Dr. Nor Baizura binti Md Yusop,  
Pensyarah Kanan,  
Jabatan Dietetik,  
Fakulti Perubatan dan Sains Kesihatan,  
Universiti Putra Malaysia,  
43400 UPM Serdang, Selangor Darul Ehsan

YBrs. Dr,

**PERMOHONAN KEBENARAN UNTUK PENGUMPULAN DATA UNTUK DTK4999  
PROJEK ILMIAH TAHUN AKHIR DI TABIKA DAERAH KOTA TINGGI JOHOR DAN  
DAERAH TAMPIN NEGERI SEMBILAN**

Dengan hormatnya saya merujuk kepada perkara di atas adalah berkaitan.

2. Sukacita dimaklumkan bahawa Bahagian Pendidikan Awal Kanak-kanak, Ibu Pejabat KEMAS bersetuju dengan permohonan di atas bagi tujuan menjalankan kajian bermula pada **Februari 2021** sehingga **Mei 2021** dengan mematuhi peraturan berikut:

- i. Mendapat kebenaran daripada KEMAS di peringkat Ibu Pejabat, Negeri dan Daerah yang terlibat sebelum kajian bermula;
- ii. Tidak melanggar dasar dan peraturan yang telah ditetapkan oleh Kerajaan dan jabatan;
- iii. Mendapat kebenaran daripada ibu bapa/ penjaga kanak-kanak yang terlibat (sekiranya melibatkan kanak-kanak);
- iv. Memelihara tatasusila/ tingkah laku/ imej yang sopan sepanjang kajian dilaksanakan;
- v. Mematuhi segala peraturan dan disiplin sepanjang tempoh kajian;
- vi. Tidak menyentuh isu-isu sensitif seperti agama, perkauman dan politik atau imej jabatan dalam kajian yang dijalankan;
- vii. Tidak mengganggu proses pengajaran dan pembelajaran serta jadual harian kanak-kanak di TASKA KEMAS;
- viii. Memastikan data yang disediakan adalah untuk tujuan kajian sahaja dan tidak boleh digunakan untuk tujuan yang lain;
- ix. Membentangkan hasil kajian kepada KEMAS sebelum ia dicetak/ diterbitkan;

..2f-

## Appendix C – Subject’s Information Sheet and Consent (English)



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

### **FORM 2.4: RESPONDENT’S INFORMATION SHEET AND INFORMED CONSENT FORM**

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

**1. STUDY TITLE:** Association of Socio-demographic, Maternal, Behavioural and Home Environmental Factors with Picky Eating Behaviour among Pre-school Children in Southern Region of Peninsular Malaysia

#### **2. INTRODUCTION:**

The purpose of this study is to investigate the association between socio-demography, maternal factors, behaviour and home environment with picky eating behaviour among pre-school children in the southern region of Peninsular Malaysia. Picky eating behaviour is defined as the children having strong food preferences, taking an inadequate variety of foods, rejecting the intake of some food groups, consuming a limited amount of food or being unwilling to try new foods which affect their nutritional status. This study is necessary because the prevalence of picky eating is higher at preschool age and they may be associated with a larger risk of being underweight and having inappropriate growth.

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

Before you decide to take part in this study, it is important for you to understand why the research is being done and the procedure of this research. Please take your time to read through this information sheet and informed consent form before making any decision. Please ask the researcher if anything is unclear or if you like to know more information. If you wish to participate, you need to sign this informed consent form.

Your participation in this study is voluntary. Hence, you will not be paid when you participate in this study. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time. If you withdraw, any data collected from you up to your withdrawal will still be used for the study.

You will have to fill in an online questionnaire using Google Form which includes information regarding your socio-demographic, maternal factors, behaviour and home environment.

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

A respondent who refuses to participate can be excluded from the study. Besides, the mother of a child who is diagnosed with chronic diseases that require special diet modification such as gastro-oesophageal reflux disease, oesophagitis, food allergies and lactose intolerance should not participate in the study.

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

##### **(a) TO YOU AS THE SUBJECT?**

There may or may not be any benefits to you. You will be able to know the nutritional status of your child. Information obtained from this study will benefit policy makers and healthcare professionals to prevent children from picky eating behaviour in Malaysia.

**(b) TO THE INVESTIGATOR?**

This study will help the researchers to determine the association between socio-demography, maternal characteristics, behaviour and home environment with picky eating behaviour of pre-school children in the southern region of Peninsular Malaysia.

**6. WHAT ARE THE POSSIBLE RISKS?**

There are no possible risks if you are involved in this study. This study does not require any test or contact with you, the respondent as all information will be gathered online using Google Form.

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

All information obtained in this study will be kept and handled confidentially. Your identity will not be revealed without your expressed consent when the study results are published and presented. Data from the study will be kept but your identity will not be exposed at any time.

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

If you have any questions about the study, please contact the researcher, Nurul Najwa Binti Mohd Noor or Lok Li Xin at telephone number 013-7030275/ 013-6605168. You may also contact to the project supervisor, Dr. Nor Baizura Md Yusop at telephone number 013-2094595. If you have any questions about your rights as a participant in this study, please contact: The secretary, Ethics Committee for Research Involving Human Subjects in Universiti Putra Malaysia (JKEUPM), at telephone number 03-9769 1002.

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

**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)

## Appendix D – Subject’s Information Sheet and Consent (Malay)



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

### **BORANG 2.4: PENERANGAN DAN PERSETUJUAN RESPONDEN**

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

**1.TAJUK KAJIAN:** Hubungan Antara Faktor Socio-Demografi, Ibu, Tingkah Laku dan Suasana di Rumah dengan Tingkah Laku Memilih Makanan di Kalangan Kanak Kanak Pra-Sekolah Di Daerah Selatan Semenanjung Malaysia

#### **2. PENGENALAN**

Tujuan kajian ini adalah untuk mengkaji hubungan antara sosio-demografi, faktor ibu, tingkah laku dan suasana di rumah dengan tingkah laku memilih makanan di kalangan kanak-kanak prasekolah di daerah selatan Semenanjung Malaysia. Definisi tingkah laku memilih makanan sebagai kanak-kanak ialah mempunyai pilihan makanan tersendiri yang kuat, tidak mengambil pelbagai jenis makanan yang mencukupi, menolak pengambilan beberapa kumpulan makanan, mengehendkan pengambilan sesuatu makanan atau tidak mahu mencuba makanan baru dimana ia akan mempengaruhi status pemakanan kanak-kanak. Kajian ini wajar dilaksanakan kerana kelaziman tingkah laku memilih makanan lebih tinggi pada usia prasekolah dan mereka mungkin dikaitkan dengan risiko yang lebih besar untuk mempunyai berat badan yang rendah dan mengalami masalah pertumbuhan.

Kajian ini telah mendapat kelulusan oleh Jawatankuasa Etika Universiti Untuk Penyelidikan Melibatkan Manusia (JKEUPM).

#### **3. APAKAH YANG PERLU ANDA LAKUKAN?**

Sebelum anda mengambil keputusan untuk mengambil bahagian dalam kajian ini, penting bagi anda untuk memahami mengapa penyelidikan ini dilakukan dan perkara yang akan terlibat dalam kajian ini. Sila baca dan pertimbangkan maklumat ini dengan teliti sebelum anda membuat keputusan. Sila hubungi penyelidik jika ada sesuatu yang tidak jelas atau jika anda mahukan maklumat lanjut. Sekiranya anda ingin mengambil bahagian, anda perlu menandatangani borang persetujuan ini.

Penyertaan anda dalam kajian ini adalah secara sukarela. Anda tidak akan dibayar untuk menyertai kajian ini. Anda berhak untuk tidak menjawab sebarang pertanyaan atau soalan yang anda enggan jawab. Jika anda mengambil bahagian secara sukarela dalam kajian ini, anda boleh menarik diri pada bila-bila masa. Sekiranya anda melakukan sedemikian, sebarang data yang dikumpulkan daripada anda masih akan digunakan untuk kajian ini.

Anda harus mengisi soal selidik dalam talian yang merangkumi maklumat mengenai sosiodemografi, faktor ibu, tingkah laku dan persekitaran rumah anda.

#### **4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?**

Responden yang enggan mengambil bahagian tidak perlu menyertai kajian ini. Selain itu, ibu seorang anak yang didiagnosis menghidap penyakit kronik yang memerlukan pengubahsuaian diet khas seperti anoreksia, penyakit refluks gastro-oesophageal, oesophagitis, alergi makanan dan intoleransi laktosa tidak boleh turut serta dalam kajian ini.

#### **5. APAKAH FAEDAH MENYERTAI KAJIAN INI?**

##### **a) KEPADA ANDA SEBAGAI PESERTA?**

Hasil daripada kajian ini berkemungkinan memberi manfaat kepada anda. Maklumat yang diperolehi dari kajian ini akan digunakan untuk membantu pembuat dasar dan kakitangan kesihatan untuk mencegah kanak-kanak daripada tingkah laku memilih makanan di Malaysia.

##### **b) KEPADA PENYELIDIK?**

Kajian ini akan membantu penyelidik untuk menentukan perkaitan antara sosio-demografi, ciri-ciri ibu, tingkah laku dan persekitaran rumah dengan tingkah laku memilih makanan di kalangan kanak-kanak prasekolah di daerah selatan Semenanjung Malaysia.

#### **6. ADAKAH IA BERISIKO?**

Tiada risiko yang mungkin berlaku sekiranya anda terlibat dalam kajian ini. Kajian ini tidak memerlukan ujian atau sentuhan dengan responden kerana semua maklumat akan didapati secara maya.

#### **7. ADAKAH MAKLUMAT DAN IDENTITI SAYA KEKAL RAHSIA?**

Semua maklumat yang diperolehi dalam kajian ini akan disimpan dan dikendalikan secara sulit bersesuaian dengan undang-undang dan / atau peraturan-peraturan yang berkenaan. Identiti anda tidak akan didedahkan tanpa persetujuan anda apabila hasil kajian diterbitkan dan dibentangkan. Segala data dari kajian akan disimpan tetapi identiti anda tidak akan didedahkan sama sekali pada bila-bila masa. Namun begitu, hasil daripada kajian ini berkemungkinan tidak dimaklumkan kembali kepada anda kerana maklumat yang diperolehi akan digunakan untuk membantu penyelidikan di masa akan datang dalam mencegah tingkah laku memilih makanan di kalangan kanak-kanak.

#### **8. SIAPA YANG SAYA PERLU HUBUNGI SEKIRANYA SAYA MEMPUNYAI SOALAN TAMBAHAN SEMASA MENGIKUTI PENYELIDIKAN INI?**

Sekiranya anda mempunyai pertanyaan mengenai kajian ini, sila hubungi penyelidik, Nurul Najwa Binti Mohd Noor atau Lok Li Xin di talian telefon 013-7030275 / 013-6605168. Anda juga boleh menghubungi penyelia projek, Dr. Nor Baizura Md Yusop. Jika anda mempunyai pertanyaan mengenai hak anda sebagai peserta dalam kajian ini, sila hubungi: Setiausaha, Jawatankuasa Etika Universiti Untuk Penyelidikan Melibatkan Manusia (JKEUPM), pada sambungan telefon 03-9769 1002.

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

## 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 ..... Tandatangan .....  
(Responden) (Saksi)

Tarikh : ..... Nama : .....  
No. K/P: .....

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

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

Appendix E - Questionnaire (Malay)



**FAKULTI PERUBATAN DAN SAINS KESIHATAN UNIVERSITI  
PUTRA MALAYSIA  
BORANG SOAL SELIDIK**

**(SULIT)**

**TAJUK KAJIAN:**

HUBUNGAN ANTARA FAKTOR SOCIO-DEMOGRAFI, IBU, TINGKAH LAKU DAN  
SUASANA DI RUMAH DENGAN TINGKAH LAKU MEMILIH MAKANAN DALAM  
KALANGAN KANAK KANAK PRA-SEKOLAH DI DAERAH SELATAN  
SEMENANJUNG MALAYSIA

**PENYELIDIK:**

NURUL NAJWA BINTI MOHD NOOR

LOK LI XIN

**PENYELIA:**

DR. NOR BAIZURA BINTI MD YUSOP

---

KOD RESPONDEN:

Arahan: Soalan di dalam borang soal selidik ini hanya untuk tujuan kajian sahaja. Semua maklumat tidak akan didedahkan kepada mana-mana pihak. Penglibatan dan kerjasama anda amatlah dihargai

## BAHAGIAN A: MAKLUMAT ANAK

Arahan: Soalan di bawah adalah **mengenai anak anda**. Sila isi jawapan yang paling bersesuaian dengan anak anda.

### BAHAGIAN 1: SOCIO-DEMOGRAFI

Arahan: Sila isi tempat kosong dan tanda (/) pada jawapan yang disediakan

	Catatan
<b>UMUR:</b> _____ tahun	
<b>JANTINA:</b> 1. <input type="checkbox"/> Lelaki 2. <input type="checkbox"/> Perempuan	
<b>ETNIK:</b> 1. <input type="checkbox"/> Melayu 2. <input type="checkbox"/> Cina 3. <input type="checkbox"/> India 4. <input type="checkbox"/> Lain-Lain : _____	
<b>SUSUNAN KELAHIRAN ANAK:</b> 1. <input type="checkbox"/> Anak sulung 2. <input type="checkbox"/> Anak bongsu 3. <input type="checkbox"/> Anak kedua/ketiga dan selanjutnya (sila jelaskan): _____	
<b>BERAT LAHIR:</b> _____ kg	
<b>BERAT TERKINI:</b> _____ kg	
<b>TINGGI TERKINI:</b> _____ cm	

Arahan: Dengan menggunakan skala berikut, sila nyatakan **klasifikasi berat badan anak anda** untuk setiap peringkat pertumbuhan (Pilih satu jawapan sahaja untuk setiap soalan).

Bil.	Maklumat	Berat badan terlalu rendah	Kurang berat badan	Normal	Berat badan berlebihan	Berat badan terlalu berlebihan
1.	Pada tahun pertama kehidupan					
2.	Sebagai anak kecil (umur 1-3 tahun)					
3.	Sebagai kanak-kanak pra-sekolah (umur 4-6 tahun)					

## BAHAGIAN 2: TINGKAH LAKU PEMAKANAN KANAK KANAK

Arahan: Sila baca pernyataan dan soalan berikut lalu tandakan (/) kotak yang paling bersesuaian dengan tingkah laku pemakanan anak anda.

Bil.	Pernyataan	Tidak pernah	Jarang-jarang	Kadang kala	Kerap	Sangat kerap
1.	Anak saya suka makanan					
2.	Anak saya makan lebih banyak ketika risau					
3.	Anak saya mempunyai selera makan yang besar					
4.	Anak saya menghabiskan makanannya dengan cepat					
5.	Anak saya berminat dengan makanan					
6.	Anak saya selalu meminta minuman					
7.	Anak saya menolak makanan baru pada pertama kali					
8.	Anak saya makan dengan perlahan					
9.	Anak saya kurang makan ketika marah					
10.	Anak saya gemar merasai makanan baru					
11.	Anak saya kurang makan ketika dia letih					
12.	Anak saya selalu meminta makanan					
13.	Anak saya makan lebih banyak ketika berasa jengkel atau geram					
14.	Sekiranya dibenarkan, anak saya akan makan terlalu banyak					

<b>Bil.</b>	<b>Pernyataan</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang kala</b>	<b>Kerap</b>	<b>Sangat kerap</b>
15.	Anak saya makan lebih banyak ketika cemas					
16.	Anak saya menikmati pelbagai jenis makanan					
17.	Anak saya meninggalkan makanan di pingganinya di akhir waktu makan					
18.	Anak saya mengambil masa lebih dari 30 minit untuk menghabiskan makanan					
19.	Jika diberi pilihan, anak saya akan makan sepanjang masa					
20.	Anak saya menantikan waktu makan					
21.	Anak saya kenyang sebelum makanannya habis					
22.	Anak saya suka makan					
23.	Anak saya makan lebih banyak bila dia gembira					
24.	Anak saya sukar untuk menikmati makanan					
25.	Anak saya kurang makan bila sedih					
26.	Anak saya cepat kenyang					
27.	Anak saya makan lebih banyak apabila dia tidak melakukan apa-apa					
28.	Walaupun anak saya kenyang, dia akan mencari ruang untuk makan makanan kegemarannya					

<b>Bil.</b>	<b>Pernyataan</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang kala</b>	<b>Kerap</b>	<b>Sangat kerap</b>
29.	Sekiranya diberi peluang, anak saya akan minum secara berterusan sepanjang hari					
30.	Anak saya tidak boleh makan jika dia telah makan makanan ringan sebelum waktu makan					
31.	Sekiranya diberi peluang, anak saya akan selalu minum					
32.	Anak saya berminat untuk merasai makanan yang belum pernah dia rasakan sebelum ini					
33.	Anak saya memutuskan bahawa dia tidak menyukai suatu makanan, walaupun belum merasainya					
34.	Sekiranya diberi peluang, anak saya akan selalu mempunyai makanan di dalam mulutnya					
35.	Anak saya makan dengan lebih perlahan semasa makan					

<b>Bil.</b>	<b>Soalan</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang kala</b>	<b>Kerap</b>	<b>Sepanjang masa</b>
1.	Adakah anak anda menghadkan untuk makan pelbagai jenis makanan?					
2.	Adakah anak-anak anda akan makan makanan kegemarannya hanya jika disediakan dengan cara yang sangat spesifik?					

<b>Bil.</b>	<b>Soalan</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang kala</b>	<b>Kerap</b>	<b>Sepanjang masa</b>
3.	Adakah anak anda mudah menerima makanan baru?					
4.	Adakah anda rasa anak anda memilih makanan?					
5.	Adakah anak anda menolak untuk makan ikan?					
6.	Adakah anak anda menolak untuk makan sup?					
7.	Adakah anak anda menolak untuk makan sayur-sayuran?					
8.	Adakah anak anda menolak untuk makan labu?					
9.	Adakah anak anda menolak untuk makan daging?					
10.	Adakah anak anda menolak untuk makan telur?					
11.	Adakah anak anda menolak untuk makan keju?					
12.	Adakah anak anda menolak untuk minum susu?					
13.	Adakah anak anda menolak untuk makan yogurt?					
14.	Adakah anak anda menolak untuk makan kentang / nasi / pasta?					
15.	Adakah anak anda menolak untuk makan roti?					
16.	Adakah anak anda menolak untuk makan bijirin?					
17.	Adakah anak anda menolak untuk makan kerepek?					

### BAHAGIAN 3: TABIAT TIDUR ANAK

Arahan: Pernyataan berikut adalah mengenai tabiat tidur anak dan kemungkinan kesukaran untuk tidur. Fikirkan tentang minggu lalu ketika menjawab soalan. Sekiranya gaya tidur anak pada minggu lalu tidak biasa kerana alasan tertentu (seperti anak anda mengalami jangkitan telinga dan tidak tidur dengan nyenyak atau alat TV rosak), pilih minggu yang paling baru.

Waktu tidur anak: \_\_\_\_\_ Waktu biasa anak bangun : \_\_\_\_\_

Jumlah waktu tidur biasa anak setiap malam (tidak termasuk tidur siang):

\_\_\_\_\_ jam dan \_\_\_\_\_ minit

Jumlah waktu tidur biasa anak setiap hari (termasuk tidur pada waktu malam dan tidur siang):

\_\_\_\_\_ jam dan \_\_\_\_\_ minit

---

Pilih **KERAP** jika sesuatu berlaku **5 kali atau lebih** dalam seminggu.

Pilih **KADANG KALA** jika berlaku **2-4 kali** dalam seminggu.

Pilih **JARANG-JARANG** jika sesuatu **tidak pernah berlaku atau berlaku sekali** dalam seminggu.

Bil.	Pernyataan	5-7 Kerap	2-4 Kadang kala	0-1 Jarang- jarang
1.	Anak tidur pada waktu yang sama pada waktu malam.			
2.	Anak tidur dalam masa 20 minit selepas masuk bilik untuk tidur			
3.	Anak tidur sendirian di atas katil sendiri.			
4.	Anak tidur di bilik tidur ibu bapa atau adik-beradik			
5.	Anak memerlukan ibu bapa di dalam bilik untuk tidur			
6.	Anak susah untuk tidur (menangis, enggan tinggal di tempat tidur, dll.)			
7.	Anak takut untuk tidur dalam gelap			

<b>Bil.</b>	<b>Pernyataan</b>	<b>5-7 Kerap</b>	<b>2-4 Kadang kala</b>	<b>0-1 Jarang- jarang</b>
8.	Anak takut untuk tidur sendirian			
9.	Anak tidur terlalu sedikit			
10.	Anak tidur degan jumlah yang cukup			
11.	Jumlah waktu tidur anak adalah sama setiap hari			
12.	Anak membasahi katil pada waktu malam			
13.	Anak bercakap semasa tidur			
14.	Anak gelisah dan banyak bergerak semasa tidur			
15.	Anak tidur berjalan pada waktu malam			
16.	Anak bergerak ke tempat tidur orang lain pada waktu malam (ibu bapa, adik beradik, dll.)			
17.	Anak mengetap gigi semasa tidur (dokter gigi mungkin memberitahu anda perkara ini)			
18.	Anak berdengkur dengan kuat			
19.	Anak kelihatan seperti berhenti bernafas semasa tidur			
20.	Anak mendengus dan / atau tersentak semasa tidur			
21.	Anak menghadapi masalah tidur sewaktu jauh dari rumah (mengunjungi saudara, bercuti)			
22.	Anak terbangun pada waktu malam dengan menjerit, berpeluh, dan tidak dapat ditenangkan			
23.	Anak terbangun oleh mimpi yang menakutkan			

<b>Bil.</b>	<b>Pernyataan</b>	<b>5-7 Kerap</b>	<b>2-4 Kadang kala</b>	<b>0-1 Jarang- jarang</b>
24.	Anak terbangun sesekali pada waktu malam			
25.	Anak bangun lebih dari satu kali pada waktu malam			
26.	Anak bangun sendiri			
27.	Anak bangun dalam mood negatif			
28.	Orang dewasa atau adik beradik mengejutkan anak			
29.	Anak mengalami kesukaran untuk bangun dari tidur pada waktu pagi			
30.	Anak memerlukan masa yang lama untuk peka pada waktu pagi			
31.	Anak kelihatan letih pada waktu siang			

Anak kelihatan sangat mengantuk atau tertidur semasa berikut (periksa semua yang berkenaan):

<b>Bil.</b>	<b>Pernyataan</b>	<b>1 Tidak mengantuk</b>	<b>2 Sangat mengantuk</b>	<b>3 Tertidur</b>
32.	Menonton Televisyen			
33.	Menaiki kenderaan			

#### BAHAGIAN 4: SUASANA DI RUMAH

Arahan: Sila baca pernyataan berikut dan tandakan kotak yang paling sesuai dengan tingkah laku pemakanan anak anda.

1. Adakah terdapat televisyen di ruang makan? ( ) Ya ( ) Tidak
2. Adakah televisyen di tonton di tempat keluarga anda sering makan? ( ) Ya ( ) Tidak
3. Berapa kerap televisyen dihidupkan di ruang makan keluarga anda?

( ) Tidak Pernah ( ) Jarang ( ) Kadang-kadang ( ) Kerap ( ) Sepanjang masa

Bil.	Pernyataan	Tidak benar sama sekali	Mungkin benar	Kadang kala benar	Selalunya benar	Sangat benar
4.	Dalam keluarga kami, waktu makan dirancang lebih awal					
5.	Keluarga kami kerap makan bersama.					
6.	Dalam keluarga kami, semua orang diharapkan berada di rumah untuk makan bersama.					
7.	Dalam keluarga kami pada waktu makan, setiap orang mempunyai peranan atau tugas tertentu untuk dilakukan.					
8.	Dalam keluarga kami, waktu makan adalah fleksibel; ahli keluarga makan bila-bila masa mereka mahu.					

## BAHAGIAN 5: AMALAN PEMAKANAN

Arahan: Dengan menggunakan skala berikut, pilih satu jawapan yang tepat untuk setiap soalan.

Bil.	Soalan	Tidak	Jarang	Kadang kala	Kebanyakan masa	Selalu
1.	Semasa anak anda berada di rumah, seberapa kerapkah anda bertanggungjawab memberi makan kepadanya?					
2.	Berapa kerapkah anda bertanggungjawab untuk menentukan saiz porsi makanan anak anda?					
3.	Berapa kerapkah anda bertanggungjawab untuk menentukan jika anak anda telah makan jenis makanan yang betul?					

Arahan: Dengan menggunakan skala berikut, pilih satu jawapan yang tepat untuk setiap soalan.

Bil.	Soalan	Tidak prihatin	Sedikit prihatin	Neutral	Cukup prihatin	Sangat prihatin
4.	Sejauh mana anda bimbangkan anak anda makan terlalu banyak ketika anda tidak berada bersamanya?					
5.	Sejauh mana anda bimbangkan anak anda harus berdiet untuk mengekalkan berat badan yang diingini?					

<b>Bil.</b>	<b>Soalan</b>	<b>Tidak prihatin</b>	<b>Sedikit prihatin</b>	<b>Neutral</b>	<b>Cukup prihatin</b>	<b>Sangat prihatin</b>
6.	Sejauh mana anda bimbang tentang anak anda mempunyai berat badan berlebihan?					

Arahan: Dengan menggunakan skala berikut, pilih satu jawapan yang tepat untuk setiap soalan.

<b>Bil.</b>	<b>Soalan</b>	<b>Tidak setuju</b>	<b>Sedikit tidak setuju</b>	<b>Neutral</b>	<b>Sedikit setuju</b>	<b>Setuju</b>
7.	Saya akan memastikan bahawa anak saya tidak makan terlalu banyak manisan (gula-gula, ais krim, kek atau pastri).					
8.	Saya akan memastikan bahawa anak saya tidak makan terlalu banyak makanan tinggi lemak.					
9.	Saya akan memastikan bahawa anak saya tidak makan terlalu banyak makanan kegemarannya.					
10.	Saya sengaja menjauhkan beberapa makanan dari jangkauan anak saya.					
11.	Saya menawarkan manisan (gula-gula, ais krim, kek, pastri) kepada anak saya sebagai ganjaran untuk tingkah laku yang baik.					
12.	Saya menawarkan makanan kegemaran anak saya sebagai ganti untuk tingkah laku yang baik.					

<b>Bil.</b>	<b>Soalan</b>	<b>Tidak setuju</b>	<b>Sedikit tidak setuju</b>	<b>Neutral</b>	<b>Sedikit setuju</b>	<b>Setuju</b>
13.	Sekiranya saya tidak membimbing atau mengatur pemakan anak saya, dia akan makan terlalu banyak makanan ringan.					
14.	Sekiranya saya tidak membimbing atau mengatur pemakanan anak saya, dia akan makan terlalu banyak makanan kegemarannya.					
15.	Anak saya mestilah selalu menghabiskan semua makanan di pingganinya.					
16.	Saya akan lebih teliti dalam memastikan anak saya makan dengan cukup.					
17.	Sekiranya anak saya mengatakan "Saya tidak lapar", saya akan tetap cuba untuk memastikan dia makan.					
18.	Sekiranya saya tidak membimbing atau mengatur makanan anak saya, dia akan makan lebih sedikit daripada yang sepatutnya.					

Arahan: Dengan menggunakan skala berikut, pilih satu jawapan yang tepat untuk setiap soalan.

Bil.	Soalan	Tidak pernah	Jarang-jarang	Kadang kala	Kerap	Sangat kerap
19.	Berapa banyakkah anda perhatikan kekerapan manisan (gula-gula, kek ais krim, pai, pastri) yang anak anda makan?					
20.	Berapa banyakkah anda perhatikan kekerapan makanan ringan (kerepek) yang anak anda makan?					
21.	Berapa banyakkah anda perhatikan kekerapan makanan tinggi lemak yang dimakan oleh anak anda?					

#### BAHAGIAN B: MAKLUMAT IBU

Arahan: Berikut adalah soalan **mengenai anda**. Isi jawapan yang paling sesuai dengan anda.

		Catatan
1.	<b>UMUR:</b> _____ tahun	
2	<b>BERAT:</b> _____ kg <b>TINGGI:</b> _____ cm	
2.	<p><b>TAHAP PENDIDIKAN:</b></p> <p>Tahap Pendidikan Bapa:</p> <p>1. <input type="checkbox"/> Tiada pendidikan formal</p> <p>2. <input type="checkbox"/> Sekolah rendah</p> <p>3. <input type="checkbox"/> Pendidikan menengah</p> <p>4. <input type="checkbox"/> Pendidikan tinggi (Diploma/Ijazah/Sarjana/PhD) dan ke atas</p> <p>Tahap Pendidikan Ibu:</p> <p>1. <input type="checkbox"/> Tiada pendidikan formal</p> <p>2. <input type="checkbox"/> Sekolah rendah</p> <p>3. <input type="checkbox"/> Pendidikan menengah</p> <p>4. <input type="checkbox"/> Pendidikan tinggi (Diploma/Ijazah/Sarjana/PhD) dan ke atas</p>	

3.	<b>JUMLAH PENDAPATAN ISI RUMAH:</b> 1. <input type="checkbox"/> $\leq$ RM 2500 2. <input type="checkbox"/> RM 2500 – RM 4849 3. <input type="checkbox"/> RM 4850 – RM 10959 4. <input type="checkbox"/> RM 10960 – RM 15039 5. <input type="checkbox"/> $>$ RM 15039	
4.	<b>JUMLAH PENDAPATAN BULANAN SENDIRI:</b> Pendapatan Ibu: RM _____	
5.	<b>No. Telefon:</b> _____	
6.	<b>E-mel:</b> _____	

Arahan: Dengan menggunakan skala berikut, sila nyatakan **klasifikasi berat badan anda** untuk setiap peringkat pertumbuhan (Pilih satu jawapan sahaja untuk setiap soalan).

Bil.	Maklumat	Berat badan terlalu rendah	Kurang berat badan	Normal	Berat badan berlebihan	Berat badan terlalu berlebihan
7.	Masa kecil anda (5 hingga 10 tahun)					
8.	Masa remaja anda					
9.	Semasa 20-an anda					
10.	Pada masa kini					

**SOALAN TAMAT**

**Appendix F – Distribution of the subjects for each subscale in the Child Eating Behaviour Questionnaire (CEBQ)**

**Table F.1: Distribution of the subjects for each subscale in the Child Eating Behaviour Questionnaire (CEBQ) (n= 372)**

Items	n (%)				
	Never	Rarely	Sometimes	Often	Always
<b>Enjoyment of Food</b>					
1. My child loves food	2 (0.5)	36 (9.7)	148 (39.8)	169 (45.4)	17 (4.6)
2. My child is interested in food	4 (1.1)	42 (11.3)	179 (48.1)	133 (35.8)	14 (3.8)
3. My child looks forward to mealtimes	59 (15.9)	83 (22.3)	161 (43.3)	59 (15.9)	10 (2.7)
4. My child enjoys eating	9 (2.4)	63 (16.9)	158 (42.5)	118 (31.7)	24 (6.5)
Mean ± SD			3.16 ± 0.67		
<b>Desire to Drink</b>					
5. My child is always asking for a drink	3 (0.8)	27 (7.3)	113 (30.4)	183 (49.2)	46 (12.4)
6. If given the chance, my child would drink countinously throughout the day	114 (30.6)	105 (28.2)	86 (23.1)	54 (14.5)	13 (3.5)
7. If given the chance, my child would always be having a drink	59 (15.9)	97 (26.1)	128 (34.4)	69 (18.5)	19 (5.1)
Mean ± SD			2.89 ± 0.84		
<b>Satiety Responsiveness</b>					
8. My child has a big appetite*	6 (1.6)	46 (12.4)	187 (50.3)	75 (20.2)	58 (15.6)
9. My child leaves food on his/her plate at the end of a meal	48 (12.9)	114 (30.6)	166 (44.6)	38 (10.2)	6 (1.6)
10. My child gets full before his/her meal is finished	28 (7.5)	96 (25.8)	191 (51.3)	48 (12.9)	9 (2.4)
11. My child gets full up easily	33 (8.9)	95 (25.5)	166 (44.6)	71 (19.1)	7 (1.9)
12. My child cannot eat a meal if s/he has had a snack just before	71 (19.1)	100 (26.9)	158 (42.5)	35 (9.4)	8 (2.2)
Mean ± SD			2.80 ± 0.55		
<b>Slowness in Eating</b>					
13. My child finishes his/her meal quickly*	4 (1.1)	51 (13.7)	172 (46.2)	100 (26.9)	45 (12.1)
14. My child eats slowly	23 (6.2)	86 (23.1)	191 (51.3)	64 (17.2)	8 (2.2)

**Table F.1: Distribution of the subjects for each subscale in the Child Eating Behaviour Questionnaire (CEBQ) (n= 372) (cont.)**

Items	n (%)				
	Never	Rarely	Sometimes	Often	Always
15. My child takes more than 30 minutes to finish a meal	91 (24.5)	102 (27.4)	132 (35.5)	39 (10.5)	8 (2.2)
16. My child eats more and more slowly during the course of a meal	60 (16.1)	120 (32.3)	131 (35.2)	46 (12.4)	15 (4.0)
Mean ± SD			2.79 ± 0.61		
<b>Food Fussiness</b>					
17. My child refuses new foods at first	51 (13.7)	84 (22.6)	189 (50.8)	37 (9.9)	11 (3.0)
18. My child enjoys tasting new foods*	19 (5.1)	57 (15.3)	173 (46.5)	96 (25.8)	27 (7.3)
19. My child enjoys a wide variety of foods*	22 (5.9)	86 (23.1)	185 (49.7)	63 (16.9)	16 (4.3)
20. My child is difficult to please with meals	129 (34.7)	101 (27.2)	106 (28.5)	31 (8.3)	5 (1.3)
21. My child is interested in tasting food s/he hasn't tasted before*	14 (3.8)	56 (15.1)	138 (37.1)	128 (34.4)	36 (9.7)
22. My child decides that s/he doesn't like a food, even without tasting it	68 (18.3)	104 (28.0)	133 (35.8)	47 (12.6)	20 (5.4)
Mean ± SD			2.79 ± 0.55		
<b>Emotional Under-eating</b>					
23. My child eats less when angry	135 (36.3)	88 (23.7)	121 (32.5)	26 (7.0)	2 (0.5)
24. My child eats less when s/he is tired	51 (13.7)	113 (30.4)	167 (44.9)	39 (10.5)	2 (0.5)
25. My child eats more when she is happy	29 (7.8)	52 (14.0)	167 (44.9)	98 (26.3)	26 (7.0)
26. My child eats less when upset	162 (43.5)	94 (25.3)	89 (23.9)	21 (5.6)	6 (1.6)
Mean ± SD			2.43 ± 0.70		
<b>Food Responsiveness</b>					
27. My child is always asking for food	10 (2.7)	53 (14.2)	178 (47.8)	126 (33.9)	5 (1.3)
28. If allowed to, my child would eat too much	106 (28.5)	108 (29.0)	121 (32.5)	32 (8.6)	5 (1.3)
29. Given the choice, my child would eat most of the time	182 (48.9)	94 (25.3)	76 (20.4)	17 (4.6)	3 (0.8)

**Table F.1: Distribution of the subjects for each subscale in the Child Eating Behaviour Questionnaire (CEBQ) (n= 372) (cont.)**

Items	n (%)				
	Never	Rarely	Sometimes	Often	Always
30. Even if my child is full up, s/he finds room to eat his/her favourite food	86 (23.1)	78 (21.0)	146 (39.2)	51 (13.7)	11 (3.0)
31. If given the chance, my child would always have food in his/her mouth	173 (46.5)	107 (28.8)	66 (17.7)	19 (5.1)	7 (1.9)
Mean ± SD	2.33 ± 0.68				
<b>Emotional Over-eating</b>					
32. My child eats more when worried	204 (54.8)	83 (22.3)	78 (21.0)	6 (1.6)	1 (0.3)
33. My child eats more when annoyed	199 (53.5)	79 (21.2)	86 (23.1)	7 (1.9)	1 (0.3)
34. My child eats more when anxious	235 (63.2)	76 (20.4)	57 (15.3)	3 (0.8)	1 (0.3)
35. My child eats more when s/he has nothing else to do	79 (21.2)	92 (24.7)	131 (35.2)	63 (16.9)	7 (1.9)
Mean ± SD	1.88 ± 0.70				

\*Reversed score

**Appendix G- Distribution of the respondents by items in Child's Sleeping Habit Questionnaire (CSHQ)**

**Table G.1: Distribution of the respondents by items in Child's Sleep Habit Questionnaire (n=372)**

Items	n (%)		
	Usually	Sometimes	Rarely
<b>Bedtime Resistance</b>			
1. Child goes to bed at the same time at night*	15 (4.0)	172 (46.2)	185 (49.7)
2. Child falls asleep alone in own bed*	163 (43.8)	119 (32.0)	90 (24.2)
3. Child falls asleep in parent's or sibling's bed	231 (62.1)	98 (26.3)	43 (11.6)
4. Child needs parents in the room to fall asleep	208 (55.9)	105 (28.2)	59 (15.9)
5. Child struggles at bedtime (cries, refuses to stay in bed, etc.)	32 (8.6)	98 (26.3)	242 (65.1)
6. Child is afraid of sleeping alone	120 (32.3)	142 (38.2)	110 (29.6)
Mean ± SD		2.01 ± 0.40	
<b>Sleep Anxiety</b>			
7. Child needs parent in the room to fall asleep	208 (55.9)	105 (28.2)	59 (15.9)
8. Child is afraid of sleeping in the dark	68 (18.3)	11.2 (30.1)	192 (51.6)
9. Child is afraid of sleeping alone	110 (29.6)	142 (38.2)	120 (32.3)
10. Child has trouble sleeping away from home (visiting relatives, vacation)	23 (6.2)	94 (25.3)	255 (68.5)
Mean ± SD		1.85 ± 0.49	
<b>Daytime Sleepiness</b>			
11. Child wakes up by him/herself*	69 (18.5)	172 (46.2)	131 (35.2)
12. Child wakes up in a negative mood	22 (5.9)	151 (40.6)	199 (53.5)
13. Adults or siblings wake up child	98 (26.3)	188 (50.5)	86 (23.1)
14. Child has difficulty getting out of bed in the morning	39 (10.5)	163 (43.8)	170 (45.7)
15. Child takes a long time to become alert in the morning	35 (9.4)	146 (39.2)	191 (51.3)
16. Child seems tired in the morning	21 (5.6)	126 (33.9)	225 (60.5)
Child has appeared very sleepy or fallen asleep during the following:	Not sleepy	Very sleepy	Fall asleep
17. Watching TV	282 (75.8)	12 (3.2)	78 (21.0)
18. Riding in a car	134 (36.0)	21 (5.6)	217 (58.3)
Mean ± SD		1.72 ± 0.37	
<b>Sleep Onset Delay</b>			
19. Child falls asleep within 20 minutes after going to bed*	47 (12.6)	167 (44.9)	158 (42.5)
Mean ± SD		1.70 ± 0.68	

**Table G.1: Distribution of the respondents by items in Child's Sleep Habit Questionnaire (n=372) (cont.)**

Items	n (%)		
	Usually	Sometimes	Rarely
<b>Night Wakings</b>			
20. Child moves to someone else's bed during the night (parent, sibling, etc.)	38 (10.2)	115 (30.9)	219 (58.9)
21. Child awakens once during the night	17 (4.6)	198 (53.2)	157 (42.2)
22. Child awakens more than once during the night	16 (4.3)	91 (24.5)	265 (71.2)
Mean ± SD		1.49 ± 0.47	
<b>Sleep Duration</b>			
23. Child sleeps too little	22 (5.9)	111 (29.8)	239 (64.2)
24. Child sleeps the right amount*	28 (7.5)	83 (22.3)	261 (70.2)
25. Child sleeps about the same amount each day*	27 (7.3)	166 (44.6)	179 (48.1)
Mean ± SD		1.46 ± 0.42	
<b>Parasomnias</b>			
26. Child wets the bed at night	17 (4.6)	84 (22.6)	271 (72.8)
27. Child talks during sleep	20 (5.4)	111 (29.8)	241 (64.8)
28. Child is restless and moves a lot during sleep	33 (8.9)	149 (40.1)	190 (51.1)
29. Child sleepwalks during the night	13 (3.5)	44 (11.8)	315 (84.7)
30. Child grind teeth during sleep (your dentist may have told you this)	23 (6.2)	63 (16.9)	286 (76.9)
31. Child awakens during night screaming, sweating and inconsolable	16 (4.3)	57 (15.3)	299 (80.4)
32. Child awakens alarmed by a frightening dream	15 (4.0)	71 (19.1)	286 (76.9)
Mean ± SD		1.33 ± 0.42	
<b>Sleep-disordered Breathing</b>			
33. Child snores loudly	21 (5.6)	82 (22.0)	269 (72.3)
34. Child seems to stop breathing during sleep	16 (4.3)	42 (11.3)	314 (84.4)
35. Child snorts and/or gasps during sleep	20 (5.4)	96 (25.8)	256 (68.8)
Mean ± SD		1.30 ± 0.47	
<b>TOTAL Mean ± SD</b>		<b>52.58 ± 9.28</b>	

\*Reversed score

## Appendix H – Turnitin Report

Nurul Najwa (198506) Thesis

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