

Prevalence of Overweight and Associated Risk Factors in Primary School Children in Nilai, Negeri Sembilan

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Abstract

Background: Childhood obesity is an alarming problem happening in this century where overweight children slowly becomes obese adult in the future if this phenomenon persist. There are many contributing factors towards childhood obesity but there are limited information regarding the prevalence and associated risk factors of overweight children in Nilai, Negeri Sembilan.

Objective:

1. To determine the prevalence of overweight among primary school children aged 11 to 12 years in Nilai, Negeri Sembilan.
2. To examine the association between prevalence and the risk factors of overweight and obesity of primary school children aged 11 to 12 years in Nilai, Negeri Sembilan.

Design: Cross-sectional study

Methodology: A validated sociodemographic questionnaire, Physical Activity Questionnaire (PAQ-C) and Children Sleep Habit Questionnaire (CSHQ) was given to 118 primary school students. Descriptive statistics were used to tabulate the socio-demographics detail whereas chi-square were used to analyse the association between BMI and risk factors.

Results: There is a prevalence of 6.8% of overweight children. Ethnicity, education level of the parents/guardian and the energy density (food consumption) shows a significant association with the children's BMI level and waist circumference. **Conclusion:** Childhood obesity might be an alarming problem in the society with the choice of dietary and physical inactivity. An early awareness and education of good diet, appropriate sleep and importance of physical activity could prevent the increase of childhood obesity prevalence rate at the earliest.

Keywords

PAQ-C (Physical Activity Questionnaire for Older Children), CSHQ (Children's Sleep Habits Questionnaire), BMI (Body Mass Index)

Introduction

Childhood obesity poses a great threat towards public health in the 21st century. Body Mass Index (BMI) have been used to identify the category of body weight with its height, as it is especially useful in assessing body fat (Barlow, 2007). Based on the recent research by WHO, 2016, overweight and obese children would very likely to remain obese during adulthood if

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weight is not properly managed and poses higher risk in developing non-communicable disease including cardiovascular diseases, diabetes and other chronic ailments (Naidu et al., 2013).

Studies suggests that age, gender and parenting styles plays a part in childhood obesity. Children often follow what the parents do, in this case, what they eat and how much they eat (Birch et al., 2001). Psychological state, for instance, depression or anxiety and parental socio-economic state also causes eating disturbances that can lead to obesity (Collins, Pakiz, & Rock, 2008; Rawana, Morgan, Nguyen, & Craig, 2010). Moreover, children who sleeps less and have sleeping disorder contributes to overweight and obese (Firouzi, Poh, Ismail, & Sadeghilar, 2014).

A recent research conducted by Lee et al., 2015, Malaysian children spend more time on sedentary lifestyles such as on screen activities (playing video games, using smart phones and watching television), therefore making them physical inactive. These physical inactivity, poor food consumption and lack of good sleep may contribute to the detrimental of the children's health and even lead to childhood obesity. Although, many studies have been conducted to examine the prevalence rate of obesity in Malaysia, there is a scarce of studies that have examine the risk factors associated with childhood obesity. Thus, the objective of the current study is to investigate the association between prevalence and the risk factors of obesity among primary school children in Nilai, Negeri Sembilan, Malaysia.

Methodology

A cross-sectional study was conducted among 120 school children to determine the prevalence and associated risk factor of overweight in primary school children of age 11 to 12 years. The students were recruited using questionnaire distributed by the researcher to 3 primary school students in Nilai, Negeri Sembilan. The inclusion of the study includes participants who studies in primary schools from the age of 11 to 12 years old, have schooling hours for at least 5 hours daily and is able to understand English. Those with mental or physical disabilities, unable to attend to school in the past 7 days for any reasons and have gone through any form of surgical management were excluded from this study.

All participants were given a questionnaire to fill, which consist of their socio-demographic data and risk factors of childhood obesity. Ethical approval was obtained and approved by the INTI International University Research and Ethics Committee, Ministry of Education and headmasters from respective schools prior to data collection.

Questionnaires on socio-demography, food consumption for the past one week, sedentary hours, level of physical activity, and sleeping habits were distributed to the subjects. The measurements of the student's weight, height and waist circumference were also taken. The record of daily food consumption was collected by having the students to write down the type of food and drinks they eat for breakfast, lunch, dinner and others for the past 7 days (Monday-Sunday) (Hjorth et al., 2014). The level of physical activity among the children is measured by using the Physical Activity Questionnaire for the Older Children (PAQ-C) (Kowalski, Crocker, & Donen, 2004). The sleeping habits were analysed with (CSHQ) validated by Owens, Spirito, & McGuinn, 2000. The Statistical Package for Social Sciences (SPSS) version 22.0 was used to analyse the data. Descriptive statistics were used to analyse the demographic data and Chi-Square were used to examine the association between BMI and the related risk factors. The level of significance for acceptance was $p < 0.05$.

Results and Discussion

The current study focuses on the prevalence of overweight and obese children in primary school aging from 11 to 12 years and the associated risk factors. Table 1 represent the demographic details while Table 2 represent the prevalence rate of overweight and obesity among the children aged 11-12.

Table 1: Prevalence of children's age, gender, and ethnicity

		Frequency (n)	Percentage (%)
Age	11	55	46.6
	12	63	53.4
	Total	118	100.0
Gender	Male	55	46.6
	Female	63	53.4
	Total	118	100.0
Ethnicity	Chinese	77	65.3
	Indian	22	18.6
	Malay	15	12.7
	Bumiputra	4	3.4
	Total	118	100.0

Table 2: Prevalence of children's BMI, and waist circumference

	BMI			Waist Circumference		
	Male, n (%)	Female, n (%)	Total, n (%)	Male, n (%)	Female, n (%)	Total, n (%)
Underweight	21 (17.8)	21 (17.8)	42 (35.6)	14 (11.9)	14 (11.9)	28 (23.7)
Normal	31 (26.3)	37 (31.4)	68 (57.6)	33 (28.0)	38 (32.2)	71 (60.2)
Overweight	3 (2.5)	5 (4.2)	8 (6.8)	7 (5.9)	8 (6.8)	15 (12.7)
Obese	0	0	0	1 (0.8)	3 (2.5)	4 (3.4)
Total	55 (46.6%)	63 (53.4)	118 (100.0)	55 (46.6)	63 (53.4)	118 (100.0)

Table 3 represents the time the student being physically inactive by calculating the total sitting hours and the physical activity level (PAQ-C score). The PAQ-C reveals that most of the students falls in the category of moderate level of physical fitness. Table 4 shows the sleeping duration of the children and the prevalence of children showing sleeping disorders.

Table 3: Level of sedentary lifestyle (sitting hours per day) and Physical activity level (PAQ-C).

Sedentary lifestyle			
	Male, n (%)	Female, n (%)	Total, n (%)
≥7 hours	55 (46.6)	63 (53.7)	118 (100.0)
Total	55 (46.6)	63 (53.4)	118 (100.0)
PAQ-C score			
Low	6 (5.1)	11 (9.3)	17 (14.4)
Moderate	33 (28.0)	43 (36.4)	76 (64.4)
High	16 (13.6)	9 (7.6)	25 (21.2)
Total	55 (46.6)	63 (53.4)	118 (100.0)

Table 4: Sleeping duration and sleep disorder scores in the students

Sleeping duration			
	Male, n (%)	Female, n (%)	Total, n (%)
Shortest	8 (6.8)	12 (10.2)	20 (16.9)
Short	30 (25.4)	31 (26.3)	61 (51.7)
Normal	17 (14.4)	20 (16.9)	37 (31.4)
Total	55 (46.6)	63 (53.4)	118 (100.0)
Sleep disorder score			
Normal	19 (16.1)	23 (19.5)	42 (35.6)
Abnormal	36 (30.5)	40 (33.9)	76 (64.4)
Total	55 (46.6)	63 (53.4)	118 (100.0)

Table 5 display the association between BMI and waist circumference with the risk factors of overweight and obesity such as gender, ethnicity, household income, parent's educational level, level of sedentary (total sitting hours), level of physical fitness, energy density as well as sleeping duration. There is a significant association between ethnicity with BMI and waist circumference among the children. The education level of the

guardians/parents also showed significant association with waist circumference but not with BMI. The energy density of the children is associated with overweight children, whereas total sitting hours showed constant result due to the fact that all of the school children sit more than 7 hours due to schooling hours and tuition sessions. There were no association between sleeping duration and sleeping disorders with the body weight of the children.

The overall prevalence of the overweight children in the current study were 6.8 % based on the BMI while 6.8% overweight and 3.4% obese children were categorized based on the waist circumference measurement. Female children present higher percentage in both the categories. Study by Okoh & Alikor, 2015 presented the same results where female primary school children has a higher prevalence of overweight and obesity compared to male. Nevertheless, there were no significant association between gender and overweight in the current study possibly due to the small sample size.

Table 5: Correlations between socio-demographic data and overweight children.

	Gender	Ethnicity	Household income	Parent's educational level	Total sitting hours	Physical activity level	Energy density	Sleeping duration	Sleeping habits
BMI	0.783	0.026	0.320	0.714	Constant	0.827	0.005	0.336	0.685
Waist circumference	0.820	0.020	0.498	0.045	Constant	0.343	0.156	0.314	0.193

Significant at $p < 0.05$ (Pearson's Chi-Square test)

Based on our results, it showed a significance association of 0.026 and 0.020 in terms of BMI and waist circumference with ethnicity groups in Malaysia. Although, a high density of the Chinese and Indian students in the current study might have possibly affected the study results, an early precaution can be taken in educating parents about the good diet food, the importance of physical activity and good sleeping hours and the dangerous consequences of sedentary hours among the children.

Parents/guardian education level were also significantly associated with overweight in children's. Parents/guardian with higher educational level tend to have overweight children possibly due to lack of time spent with the children or these children are exposed to fast food more frequently compared to parents with lower education level (Ganasegeran et al., 2012; Rezali, Chin, Yusof, & Nisak, 2012). These results signify there is a need of awareness to be created among the parents about healthy diet.

The previous results are accordance as food energy density are significantly associated with overweight children. According to a study done by (Naidu et al., 2013), there is a positive connection when it comes to eating habits and overweight. The study reported that females have higher mean score in eating as this is due to emotional difference between male and female. Furthermore, it is known that Malaysians eat frequently,

for example, snacks between breakfast, dinner and more commonly, supper as we have an increased amount of fast food restaurants and outlets, hence leading to more energy intake and overweight (Ganasegeran et al., 2012; Rezali et al., 2012).

There were no significant association between overweight and other risk factors such as physical activity level, sedentary lifestyle, sleeping duration, sleeping habits, gender and household income. The possible reason could be due to the small sample size collected from only three schools and targeted only children from the age of 11 and 12 years old.

Conclusions

The present study showed a prevalence of 6.8% of overweight children in Nilai, Negeri Sembilan. There has been a steady increase of overweight children in our society as this marks the necessity of proactive measures by the parents as well as the schools in educating them the importance of good healthy life. By educating these children during childhood, they will be more aware of the necessity of physical activity, appropriate portion and good food as well the importance to have sufficient sleep. To further emphasize, teachers and parents plays a vital role in monitoring the children's eating habit, regular exercise and good mental health. They should set a good example and educate their children about the importance and benefits of maintaining a good health.

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