

OBESITY AMONG URBAN PRIMARY SCHOOLCHILDREN

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ABSTRACT: Three urban public primary schools in the district of Petaling, Selangor were surveyed for obesity amongst the schoolchildren and factors related to it. The prevalence of obesity amongst primary schoolchildren, with the mean age of 8.91 years was 9.5%. In addition, it was more prevalent among the boys ($p < 0.05$) as compared to the girls. However, there was no difference with regards to ethnicity, being breastfed, physical activity, time spent watching television or fast food intake in relation to obesity among these primary schoolchildren. A larger community study is required to determine if other specific factors and dietary energy intake are associated with obesity amongst primary schoolchildren, especially in rural or less urbanised regions. (*JUMMEC 2007; 10(1): 17-20*)

KEYWORDS: Obesity, primary schoolchildren, prevalence, cross-sectional survey

Introduction

Childhood obesity is rapidly increasing worldwide (1,2) and is also increasing in the Asian countries (3). The consequences of childhood obesity include the persistence of obesity into adulthood (4,5), increased risk of diabetes, hyperlipidaemia and cardiovascular disease in later life (6), and negative psychosocial effects (7). Therefore, prevention of obesity is paramount.

Previous studies in developed countries suggested that an increase in energy intake, reduced physical activities and a sedentary lifestyle were factors related to the occurrence of obesity (8,9,10).

In Malaysia, the prevalence of childhood obesity (as defined by the American National Centre for Health Statistics), was 6.0% to 7.8% (11,12). However, in a study by Anuar Zaini *et al*, the prevalence of obesity was 6.3%, using the International Obesity Task Force definition (13,14). The aim of this study was to investigate the prevalence of obesity among primary schoolchildren and factors relating to the occurrence of obesity.

Methods

This study was a cross-sectional survey conducted from January to March 2003 in three primary schools in the

district of Petaling in Selangor. Primary schoolchildren aged 7 to 11 years were invited to participate. Participant information sheet, consent form and a structured questionnaire were given to the students to be distributed to their parents. Approval was obtained from the Ministry of Health, Malaysia, the state education department and the headmasters of the selected schools. The three schools selected were publicly funded primary co-education schools. The schoolchildren were selected randomly.

Obesity was defined using a set of sex-specific and age-specific body mass index (BMI) cut-off points, which correspond to an adult BMI of 30 kg/m². These cut-off points were derived from BMI centile curves, which was constructed using a mathematical formula (LMS methods) (15).

A pre-tested structured questionnaire was used to record information on socio-demographic details, the mother's breast-feeding practice, student's birth weight, physical and sedentary activities, and the frequency of

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fast food intake. The mother's breastfeeding practice was defined as either exclusive or mixed breastfeeding for at least six months' duration. The physical activities included exercise and involvement in sports. Sedentary activity was based on the time spent watching television. The questionnaire was peer reviewed by sports physicians and a nutritionist. With parental consent, anthropometric assessment of the students was taken by the author (SAH) and two trained research assistants.

Body weight measurement was determined using a SECA 762 mechanical scale (to the nearest 0.5 kg), while the height measurements were (to the nearest 0.5 centimetre) determined using a GIMA (San Donato Milanese, Italy) wall altimeter. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) for Windows version 11. Cross-tabulation (χ^2 tests) for categorical variables were used. A *p* value of 0.05 or less was considered significant.

Results

A total of 630 questionnaires were distributed, but only 431 completed questionnaires were returned, giving a response rate of 68.4%. The prevalence of obesity in this study was 9.5%. However, the prevalence was 3.0% when the obesity was defined according to the International Obesity Task Force (14). In this study, 216 (50.1%) schoolchildren were boys and the majority of the participants were of Malay ethnicity. The schoolchildren were aged between 7 and 11 years with the mean of 8.91 years. Table 1 showed a tabulated summary of the socio-demographic characteristics of the schoolchildren.

There was a difference with regard to gender between the obese and non-obese schoolchildren, where obesity

was more prevalent among the boys ($p < 0.05$). However, there was no difference noted with regard to ethnicity or within the ethnicity subgroups, being breastfed, physical activities, sedentary activities or frequency of fast food intake (Table 2) between the obese and non-obese schoolchildren.

Discussion

This cross-sectional survey involving 431 schoolchildren between seven and 11 years was conducted in three schools in the district of Petaling in Selangor. Such study is necessary not only to determine the current prevalence of obesity in our schoolchildren but also will allow secular trends to be monitored, particularly those at high risk of developing the problem. More importantly, information gathered from such study will allow better understanding of obesity in schoolchildren by targeting at high-risk groups and will hopefully assist in its prevention.

The prevalence of obesity among primary schoolchildren whose mean age was 8.91 years within the three schools was 9.5%. However, when obesity was defined using the International Obesity Task Force (14), the prevalence was only 3.0%, whereas in a separate study Anuar Zaini *et al* reported a prevalence of 6.3% (13). Their study population was larger, involving only schoolchildren between the age of 9 and 10 years and the majority of the participants were girls (13).

There were significantly more male primary schoolchildren who were obese compared to their female counterparts. This observation was similar to that found by other studies (11,12). Higher prevalence of obesity in male schoolchildren may be associated with their high-risk dietary pattern. However, a more

Table 1. Demographics of the schoolchildren attending urban publicly funded primary schools

Characteristic	n	%
Gender		
Male	216	50.1
Female	215	49.9
Ethnic group		
Malay	269	62.4
Chinese	73	16.9
Indian	72	16.7
Others	17	4
Age		
Mean \pm SD (years)	8.91 \pm 1.33	
Range (years)	7 to 11	
Breastfeeding practices (non - exclusive)		
At least for 6 months	374	86.6
Never breastfed	57	13.2

thorough study on the amount of dietary energy intake is required to examine this relationship.

This study noted that obesity was equally prevalent in all three major ethnic groups, irrespective of gender, which is similar to that found by another local study (12). In terms of breastfeeding practices, it is comforting to find out that the majority (86.6%) of the mothers were practising breastfeeding on their children during infancy. However, there was no difference between the obese and non-obese groups with regard to this early feeding practice, as shown in other studies (16). In this study, breastfeeding practice included both exclusive and mixed practices. In the other study, the participants were in the younger age groups (i.e. 5 to 6 years old) and studied on exclusive breastfeeding practices (16).

It was noted that there was no association between the frequency of physical activities and obesity. Furthermore, the majority of the primary schoolchildren did not engage in physical activities as recommended by the American Heart Association (17). This present

study found no difference in terms of the time spent watching television with obesity, as observed by another study (18). However, a pattern was noted that obesity was less common among those who watch one hour or less of television. Based on self-reported television watching, Crespo *et al* found a positive association between television watching and obesity among girls (9). In this study, the information on the duration of television watching was obtained from the schoolchildren's parents, which could be underestimated.

This study has several limitations. The study population was not representative of the wider Malaysian population. The study was conducted in urban primary schools in a very industrialised and commercial region of Malaysia, where the educational and wealth status of the residents are different from those in many other parts of the country. A community-based study targeting a representative population is likely to provide a better estimation of the size of the problem and identify risk factors for obesity that may be unique to Malaysians.

Table 2. Characteristics of obese schoolchildren in comparison to non-obese schoolchildren

Characteristics of studied group	Obese schoolchildren (N = 41)	Non-obese schoolchildren (N = 390)	χ^2	p-value
Gender :				
Male	30 (73.2%)	186 (47.7 %)	$\chi^2 = 9.63$	0.002
Female	11 (26.8%)	204 (52.3%)		
Ethnic group :				
Malay	28 (68.3%)	241 (61.8%)	$\chi^2 = 4.04$	0.257
Chinese	3 (7.3%)	70 (17.9%)		
Indian	7 (17.1%)	65 (16.7%)		
Others	3 (7.3%)	14 (3.6%)		
Breastfeeding experience				
At least for 6 months	35 (85.4%)	339 (86.9%)	$\chi^2 = 0.08$	0.78
Never breastfed	6 (14.6%)	51 (13.1%)		
Physical activities				
< 3 times/week	25 (60.9%)	224 (57.4%)	$\chi^2 = 0.19$	0.66
3 times or more/week	16 (39.1%)	116 (42.6%)		
Time spent watching television/day:				
< 1 hour/day	5 (12.2%)	78 (20.0%)	$\chi^2 = 1.45$	0.23
1 hour and more/day	36 (87.2%)	312 (80.0%)		
Frequency of fast food intake				
< 2 times/week	38 (92.7%)	321 (82.3%)	$\chi^2 = 2.87$	0.09
2 times or more/week	3 (7.3%)	69 (17.7%)		

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