CHILDHOOD OBESITY; ASSOCIATED FACTORS AND ITS RELATIONSHIP WITH HEALTH RELATED QUALITY OF LIFE AMONG PRIMARY SCHOOL CHILDREN IN KUCHING, SARAWAK

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CHILDHOOD OBESITY; ASSOCIATED FACTORS AND ITS RELATIONSHIP WITH HEALTH RELATED QUALITY OF LIFE AMONG PRIMARY SCHOOL CHILDREN IN KUCHING, SARAWAK

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A thesis submitted in fulfillment of the requirements for the Master of Public Health (Health Promotion)

Faculty of Medicine and Health Sciences
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2010
DECLARATION

The work contained in this thesis has not been previously submitted in support of an application for another degree of qualification of this or any other university or institution of higher learning.

Signature: 

Name: JULAI DAH BINTI SHARIP

Date: July 22, 2010
DEDICATION

To my husband, Ahmad Lokman bin Abdul Hadi for his unconditional love, encouragement and support me endlessly. To my princes and princess Amirulhakim, Khairul Anwar, Muhammad Syukri and Nur Amalina who always give me continuous inspiration.
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<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
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<tr>
<td>BMI</td>
<td>Body Mass Index</td>
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<td>CDC</td>
<td>Centre for Disease Control and Prevention</td>
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<td>HRQOL</td>
<td>Health Related Quality of Life</td>
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<tr>
<td>IOTF</td>
<td>International Obesity Task Force</td>
</tr>
<tr>
<td>MASO</td>
<td>Malaysia Association for the Study of Obesity</td>
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<td>MOH</td>
<td>Ministry of Health, Malaysia</td>
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<td>NHMS</td>
<td>National Health Morbidity Survey</td>
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<td>NPANM</td>
<td>National Plan of Action for Nutrition of Malaysia</td>
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<tr>
<td>QOL</td>
<td>Quality of Life</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>chi-squared test</td>
</tr>
<tr>
<td>d.f.</td>
<td>degree of freedom</td>
</tr>
<tr>
<td>$F$</td>
<td>Computed value of ANOVA</td>
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<tr>
<td>$M$</td>
<td>Mean</td>
</tr>
<tr>
<td>$N$</td>
<td>Total number in a sample</td>
</tr>
<tr>
<td>$n$</td>
<td>Number in a subsample</td>
</tr>
<tr>
<td>$p$</td>
<td>Probability value</td>
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<tr>
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<td>Pearson product-moment correlation</td>
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<tr>
<td>$SD$</td>
<td>Standard deviation</td>
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<td>$t$</td>
<td>Computed value of $t$ test</td>
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ABSTRACT

CHILDHOOD OBESITY: ASSOCIATED FACTORS AND ITS RELATIONSHIP WITH HEALTH RELATED QUALITY OF LIFE AMONG PRIMARY SCHOOL CHILDREN IN KUCHING, SARAWAK

Julaidah binti Sharip

The main objective of the study was to determine the factors associated with childhood obesity and the relationship between BMI and HRQOL. It was a cross sectional study conducted among primary school children aged 10 to 12 years old in Kuching, Sarawak. Height and weight of 380 school children were measured to determine BMI. Children were assessed using self reported questionnaire on socio demography and lifestyle pattern. PedsQL™ 4.0 generic core scale inventory was administered to assess children’s HRQOL by self report and parent-proxy report. The prevalence of overweight and obesity were 15.8% and 7.9% respectively. In the final logistic regression model there were four significant predictor variables; male, household income more than RM3000 and duration of sedentary activity more than 2 hours a week. Obese children reported having lower HRQOL compared to normal weight and overweight children for total scales, psychosocial scales, emotional and school functioning subscales. Meanwhile, parents did not perceive any difference of children’s HRQOL score for all BMI categories. These findings are a call for the development and implementation of national policies and programmes for the prevention of childhood obesity and weight reduction programmes.
ABSTRAK

OBESITI DI KALANGAN KANAK-KANAK; FAKTOR-FAKTOR BERKAITAN SERTA
KESANNYA TERHADAP KUALITI KEHIDUPAN YANG BERKAITAN DENGAN
KESIHATAN DI KALANGAN KANAK-KANAK SEKOLAH DI KUCHING, SARAWAK

Julaidah binti Sharip

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.1. Introduction

The prevalence of overweight and obesity is increasing in adult and children, and considered as an important public health issue. Indeed, it is now common that it is replacing the more traditional public health concerns, including under nutrition and infectious diseases, as one of the most significant contributors to ill health (World Health Organisation [WHO], 1998). These trend affecting both, developed and developing countries (Neovius, et al., 2004; Jafar, et al., 2008; Ziraba, et al., 2009) demonstrates the global spread of the obesity epidemic.

Obesity results from positive energy balance when energy intake is more than what the body need over a considerable period (WHO, 1998). The aetiology of obesity is multi-factorial (Reilly, et al., 2005; Olivera, et al., 2006; Procter, 2007) which can be divided into modifiable and non modifiable causes. The modifiable causes include over consumption of high calorie foods, sedentary behaviour and lack of regular exercise. These situations have great influence by environmental and societal changes. The non modifiable causes include genetics factors where a greater risk of obesity has been found in children of obese and overweight parents (American Obesity Association, 2009).

Pubertal age or early adolescence stage, characterised by physical, psychological and emotional changes are found to be associated with high prevalence of obesity (Bong & Safurah, 1996; Kasmini, et al., 1997; Thompson, et al., 2007). Overweight and obese children are likely to stay
obese until adulthood. As a consequence, non-communicable diseases related to obesity are more likely to occur at a younger age.

The health consequences of obesity are varied, ranging from an increased risk of premature death to several non-fatal but serious diseases that impact on immediate overall quality of life (QOL). The known associated effect of obesity includes Type 2 diabetes, hypertension, dyslipidaemia, cardiovascular disease, respiratory dysfunction, gallbladder disease, osteoarthritis and certain cancers (WHO, 1998). Obesity has also been identified to be related with psychosocial problems such as low self-esteem and depression (Erickson, et al., 2000). The physical and psychological consequences of obesity have been identified to be associated with child’s QOL (Schwimmer, et al., 2003; Williams, et al., 2005).

Assessment of obesity in children and appropriate management are important to prevent the progression of the condition (Wright, et al., 2001). Therefore, understanding the causes and the consequences of childhood obesity can provide the opportunity to focus resources and interventions in health promotion that addresses the problem. Knowledge of health related QOL (HRQOL) can contribute to a better understanding of the patient’s need, an improvement in care and a better evaluation of treatment.
1.1.1. Purpose of the study

The purpose of the study is to determine the prevalence of overweight and obesity among school children in Kuching district and to identify the factors associated with the conditions. This study was also conducted to determine the relationship between health related quality of life and Body Mass Index of the children.

1.1.2. Background of the study

Kuching Division in Sarawak consists of three districts namely Kuching, Bau and Lundu. The current study was carried out in Kuching district, the fourth largest urban area in Malaysia after Kuala Lumpur, Penang and Johor Bahru. The main urban population of 593,000 is made up of Malays, Chinese, Iban, Bidayuh and others (Department of Statistics, 2008). Kuching has undergone economics and infrastructures development including improvement of educational facilities.

The subjects comprised of children aged 10 to 12 years attending formal education in government primary schools in Kuching district. There are three types of government primary school, namely National Primary School (Sekolah Rendah Kebangsaan), National Type Chinese Primary School (Sekolah Rendah Jenis Kebangsaan Cina), and Dual Language School (Sekolah Dua Aliran).
1.1.3. Significance of the study

The growing epidemic of childhood obesity is becoming one of the most important public health concerns in developing countries (Ogden, et al., 2006). The National Health Morbidity Survey II (NHMSII) and NHMS III showed an increase in prevalence of obesity among adult in Malaysia. However, there is no national data to compare the trend of obesity among Malaysian children and adolescents as the study on children and adolescent’s nutritional status was carried out only in the NHMS III (MOH, 2008).

Although the aetiology of childhood obesity is common in the world, the processes of the development of childhood obesity could vary in different populations, which have culturally and socially different backgrounds. Therefore, it is important to determine the prevalence of childhood obesity and to examine the factors influencing the development of childhood obesity in the local community. A study on socio demography, nutritional and lifestyle factors associated with obesity in children would assist in the design and implementation of health promotion programmes aimed at child obesity prevention. The results will determine the importance of initiating childhood obesity rehabilitation programme. In addition, greater attention should be given in preventing excessive weight gain and obesity as it will be more cost effective than to deal with obesity once it has fully developed.

Childhood overweight and obesity should be given an appropriate attention in health promotion because of its consequences in adulthood. A study by Whitaker, et al., (1997) has demonstrate that 52% of children who are obese between the ages of 3 and 6 are found obese at age twenty five, as opposed to only 12% of normal and underweight children. Obesity is known to be
associated with health, psychological and social problems. Although the health consequences of obesity are seen during adulthood, the underlying of the diseases could originate during childhood. It is therefore vital to determine whether early signs of chronic diseases could occur in overweight and obese children.

The fact that obesity is predominantly a lifelong condition emphasizes the importance of HRQOL research in this field. The measures of HRQOL are subjective. Therefore, parent-proxy’s perspective about the child’s health is also important because parent’s perspective is likely to be a strong driver in obesity intervention programme.

In reference to the Bibliography of Primary Care Research (University of Malaya, 2008) and information from Department of Education, Sarawak, there is no published research on obesity among children and adolescents in Sarawak.
1.2. Literature review

1.2.1. Introduction

Obesity has become an increasingly significant medical problem in children and adolescents (Sorof & Daniels, 2002). The most significant long-term consequence of childhood obesity is its persistence into adulthood, along with numerous associated health risks (WHO, 1998). Effective prevention and treatment for overweight and obese children is essential to prevent the development or progression of the condition in children.

Several academic and professional fields such as medical, public health, psychology, sociology and economics have contributed in research on childhood obesity. This review includes clinical, psychology and public health literatures. The first part reviews the concept of the definition of overweight and obesity in children and the trends of childhood obesity in different countries. This review also discusses the factors that contribute to childhood obesity focusing on three main components, namely socio demography and lifestyle factors including nutrition and physical activity.

This literature also assesses the consequences of overweight and obesity on health related quality of life (HRQOL) with a focus on physical health and psychosocial health which includes emotional, social and school functioning. The last part of the review discusses the preventive measures and management of childhood obesity.
1.2.2. Definition of overweight and obesity

There are several definitions of overweight and obesity in children and adolescents used in the literatures. World Health Organization defines overweight and obesity as abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired (WHO, 1998). Bellizi, et al., (1995) describes overweight as excess body weight while obesity is defined as a condition where a pathological excess of body fat is present in an individual. For epidemiological and research purposes, it is useful to have a common definition of obesity.

Classifying overweight and obesity during childhood and adolescence is complicated by the fact that height is still increasing and body composition is continually changing. Such changes often occur at different rates and times in different populations. Several techniques to measure body fat including density base (hydrodensitometry, air displacement plethysmography), scanning (computerized tomography, magnetic resonance imaging, dual energy x-ray absorptimetry) and bioelectrical impedance. However, these techniques are inappropriate for research purposes because it requires more time to perform with trained personnel, high cost and only found in some tertiary hospitals (Sweeting, 2007).

Due to difficulties in direct measurement of body fat for clinical and epidemiological studies, child overweight and obesity can be assessed by means of indicators based on weight and height measurements, such as weight for height measures or Body Mass Index (BMI) (WHO, 1995). BMI is calculated as the weight in kilograms divided by square of height in meters (kg/m²).
Although BMI is a rough guide, it provides a reasonable estimate of adiposity which, in turn, also predicts risks for current or future medical complications of obesity. Other anthropometric measurement such as triceps skin folds thickness will give direct measurement of subcutaneous fat. However, considerable training to take measurements as well as to monitor patients is required to achieve sufficiently high reliability for scientific research purposes. Furthermore, the reliability of the measurement can be questionable when conducted by different observers (Dietz & Bellizi, 1999).

Although BMI is currently used as a measure of body fatness in children and adolescents, there have been a number of BMI standards used in the definition of overweight and obesity. For example, the BMI cut-off points recommended by the WHO Consultation of Obesity were the first cut-off points developed at the international level. WHO recommends that for children aged 2 to 10 years, the National Centre for Health Statistics (NCHS) Median +2SD reference weight for height to could be used to denote overweight in children. BMI values greater than 85th percentile represents risk of overweight (WHO, 1995).

Although this has been generally accepted, the relevance of the BMI cut-off points is questionable to a number of countries and regions particularly in the Asia and Pacific regions who generally have a higher percentage of body fat at a given BMI, higher waist to hip ratio and more centralised fat distribution than Caucasians (Weisell, 2002). The Centres for Disease Control and Prevention (CDC), USA has provided BMI for age percentile chart for boys and girls aged 2 to 18 years old. A BMI for age greater than 85th percentile means risk of overweight and BMI more than 95th percentile as overweight (CDC, 2008). The International Obesity Task
Force (IOTF) adopted BMI of 25 kg/m² and a BMI of 30 kg/m² cut-off points for overweight and obesity from 2 to 18 years to standardize the assessment of obesity worldwide. It provides age and gender specific cut-off points for overweight and obesity (Dietz, 1999).

Manios, et al., (2007) used both, the CDC and the IOTF methods to determine the prevalence of obesity among preschool Greek children, in order to make the data most useful for comparison, and to contribute to the understanding of international standard definition of overweight and obesity. The overall estimates of at risk of overweight and overweight using the CDC method was 31.9% which was 10.6 percentage points higher than the IOTF estimate of 21.3% and this difference was statistically significant. Therefore, it is important to ensure that the same cut-off reference values are being used to define overweight and obesity, when comparing studies on prevalence of obesity in children.

Cole et al, (2000) has published a set of sex-specific BMI cut-off points for overweight and obesity in the same age group. This cut-off point was based on six nationally representative data sets from Brazil, Great Britain, Hong Kong, the Netherlands, Singapore and the USA for BMI and linked to the widely used cut-off of greater than 25 kg/m² and less than 30 kg/m² for overweight and obesity. Thus, the terminology used by researchers varies. Examples "overweight", "obesity" and "at risk for overweight" depending on the method used to define BMI.

In conclusion, BMI remains one of the most frequently used indicator as a screening tool in the evaluation of childhood overweight and obesity, even though there is still no globally accepted BMI cut-off point. Regardless of the precise terminology and definitions used, the health impact