UNIVERSITI PUTRA MALAYSIA

FACTORS CONTRIBUTING TO DISORDERED EATING BEHAVIOURS AND AT-RISK OF EATING DISORDERS AMONG ADOLESCENT GIRLS IN KELANTAN, MALAYSIA

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Doctor of Philosophy

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

FACTORS CONTRIBUTING TO DISORDERED EATING BEHAVIOURS AND AT-RISK OF EATING DISORDERS AMONG ADOLESCENT GIRLS IN KELANTAN, MALAYSIA

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March 2008

Chairman: Mohd. Nasir Mohd. Taib, PhD

Faculty: Medicine and Health Sciences

Disordered eating attitudes and behaviours, and body image disturbances are becoming more frequent among female adolescents in Eastern countries. The disordered eating behaviours such as dietary restraint (dieting) and binge eating could be the risk factors for nutritional deficiencies, and are precursors for the development of eating disorders. This study was undertaken to examine the relationships between disordered eating attitudes and behaviours with personal factors (biological, psychological and cognitive) and socio-environmental factors (parental socioeconomic status and influence of mother, peer and media) in general population of adolescent girls.

A cross-sectional study was carried out among 489 secondary school girls aged 15 – 17 years (mean age = 16.2 ± 0.5 years) in Kelantan. Subjects were invited to complete a self-administered questionnaire, including Eating Attitudes Test-26 (EAT-26), Restraint Scale of Dutch Eating Behaviour Questionnaire (DEBQ-R), Binge Scale Questionnaire (BSQ), Contour Drawing Rating Scale, Rosenberg Self-

Esteem Inventory, Fear of Fat Scale and three subscales from Perceived Sociocultural Influences on Body Image and Body Change Questionnaire. Besides, subjects were evaluated on weight management knowledge and nutrition knowledge. Anthropometric (height and weight) data were also collected on each of these subjects.

On average, subjects consumed 81.1% (1663 ± 482 kcal) of recommended energy intake. Almost all nutrient intakes were less than the recommended intake for Malaysian except protein (102.6%) and total vitamin A (128.7%). Mean calcium intake (307.3 ± 133.1 mg/day) was the lowest among all nutrients, which is only 30.7% of the recommended intake. Among all subjects, 3.1% were underweight, 9.8% overweight, 8.6% obese and the remainder of 78.5% were normal weight. There were 22.3% of the subjects at-risk of eating disorders. Restrained eating and binge eating was reported by 36.0% and 35.4% of the subjects, respectively. A total of 87.3% subjects were dissatisfied with their body size and 61.5% had an incorrect perception of body weight status. More than half of the subjects were concerned about their body weight (59.1%), reported feeling dissatisfied with their body weight (58.5%) and wanted to lose weight (58.3%).

Logistic regression models had explained more of the variance in the restraint scores (74.2%) and the EAT-26 scores (49.8%) than in the binge scores (34.2%). The strongest significant predictor for restrained eating was weight loss intention. In addition, dietary restraint was also significantly predicted by body weight concern, fear of being fat and influences of mother to lose weight. The three significant predictors for binge eating were influences of mother, best friend and media to lose

weight**.** Furthermore, adolescents who were at-risk of eating disorders can be predicted by restrained eating, binge eating, fear of being fat and perceived media pressure to lose weight.

The model tested in this study that based on Bandura's Social Cognitive Theory had explained a large percentage of the variance in the behavioural factors. The high predictive power of the model tested suggests that the model is applicable to the local population. So, by addressing effectively the personal and socio-environmental factors included in the model, it may be able to influence eating behaviours and prevent the onset of disordered eating among adolescents in this country.

The prevalence of disordered eating attitudes and behaviours among adolescent females in Kelantan shown by this study suggests the need for multidisciplinary studies to systematically and accurately examine eating behaviours of adolescent girls in order to solve more efficiently the increased adolescent eating problems. Preventive programmes encouraging appropriate and healthy eating behaviours should be implemented and assessed.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

FAKTOR-FAKTOR YANG MENDORONG TINGKAH LAKU MAKAN YANG TIDAK TERATUR DAN RISIKO GANGGUAN MAKAN DI KALANGAN REMAJA PEREMPUAN DI KELANTAN, MALAYSIA

Oleh

SOO KAH LENG

Mac 2008

Pengerusi: Mohd. Nasir Mohd. Taib, PhD

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Sikap dan tingkah laku makan yang tidak teratur, dan salah tanggapan terhadap imej tubuh semakin berleluasa di kalangan remaja perempuan di negara-negara Timur. Tingkah laku makan yang tidak teratur seperti menahan makan (berdiet) dan binge boleh menjadi faktor-faktor risiko kepada kekurangan pemakanan dan mendorong kejadian gangguan makan. Kajian ini telah dijalankan untuk mengkaji perkaitan di antara sikap dan tingkah laku makan yang tidak teratur dengan faktor-faktor peribadi (biologikal, psikologikal dan kognitif) dan faktor-faktor sosio-persekitaran (status sosioekonomi ibu-bapa dan pengaruh ibu, rakan dan media) dalam populasi umum remaja perempuan.

Satu kajian keratan rentas telah dijalankan di kalangan 489 pelajar perempuan sekolah menengah berumur di antara 15 – 17 tahun (umur min = 16.2 ± 0.5 tahun) di Kelantan. Subjek dijemput melengkapkan satu borang soal-selidik yang mengandungi Ujian Sikap Makan-26 (*Eating Attitudes Test-26; EAT-26),* Skala Penahanan dari Borang Soal-Selidik Tingkah Laku Makan Belanda (*Restraint Scale*

of Dutch Eating Behaviour Questionnaire; DEBQ-R), Borang Soal-Selidik Skala Binge (*Binge Scale Questionnaire; BSQ),* Skala Penilaian Lukisan Kontur *(Contour Drawing Rating Scale),* Inventori Estim Diri Rosenberg *(Rosenberg Self-Esteem Inventory),* Skala Ketakutan Terhadap Kegemukan *(Fear of Fat Scale)* dan tiga subskala dari Borang Soal-Selidik Pengaruh Sosiobudaya Terhadap Imej Badan dan Perubahan Badan (*Perceived Sociocultural Influences on Body Image and Body Change Questionnaire).* Di samping itu, subjek telah dinilai pengetahuan pengurusan berat dan pengetahuan pemakanan. Data antropometri (tinggi dan berat) juga diambil.

Secara purata, subjek mengambil 81.1% (1663 ± 482 kcal) daripada pengambilan tenaga yang disarankan.Hampir kesemua pengambilan nutrien kurang daripada saranan pangambilan untuk warganegara Malaysia kecuali protein (102.6%) dan jumlah vitamin A (128.7%). Purata pengambilan kalsium adalah yang paling rendah berbanding nutrien-nutrien lain yakni hanya 30.7% daripada pengambilan yang disarankan. Di antara semua subjek, 3.1% kekurangan berat badan, 9.8% kelebihan berat badan, 8.6% obes dan 78.5% adalah berat badan normal. Terdapat 22.3% subjek menghadapi risiko gangguan makan. Menahan makan dan binge masing-masing telah dilaporkan oleh 36.0% dan 35.4% subjek. Sejumlah 87.3% subjek tidak puas hati terhadap saiz badan mereka, dan 61.5% mempunyai persepsi yang tidak betul terhadap status berat badan. Melebihi separuh daripada jumlah subjek mengambil berat tentang berat badan mereka (59.1%), melaporkan terasa tidak puas hati dengan berat badan mereka (58.5%) dan ingin mengurangkan berat (58.3%).

Model-model regresi logistik telah menerangkan lebih banyak variansi untuk skor manahan makan (74.2%) dan skor EAT-26 (49.8%) berbanding skor binge (34.2%). Peramal signifikan yang paling bagus untuk menahan makan ialah keinginan untuk mengurang berat. Selain itu, menahan makan juga dapat diramal melalui sikap mengambil berat tentang berat badan, ketakutan terhadap kegemukan dan pengaruh ibu untuk mengurangkan berat. Tiga peramal yang signifikan untuk binge ialah pengaruh ibu, kawan rapat dan media untuk mengurang berat badan. Di samping itu, remaja yang menghadapi risiko gangguan makan dapat diramal melalui kelakuan menahan makan, binge, ketakutan terhadap kegemukan dan merasakan tekanan media untuk mengurang berat.

Model yang diuji dalam kajian ini yang berdasarkan Teori Sosial Kognitif Bandura telah menerangkan peratusan variansi yang besar untuk faktor-faktor tingkah laku. Kuasa peramalan yang tinggi bagi model yang diuji mencadangkan model ini boleh diguna oleh populasi tempatan. Maka, menangani faktor-faktor peribadi dan sosio-persekitaran yang terkandung dalam model ini secara berkesan mungkin dapat mempengaruhi tingkah laku makan, dan mencegah berlakunya tingkah laku makan yang tidak teratur di kalangan remaja dalam negara ini.

Prevalens sikap dan tingkah laku makan yang tidak teratur di kalangan remaja perempuan di Kelantan yang ditunjukkan oleh kajian ini mencadangkan perlunya kajian-kajian multidisiplin untuk menyelidik tingkah laku makan remaja perempuan secara sistematik dan tepat agar dapat mengatasi masalah cara makan remaja yang semakin berleluasa dengan lebih cekap. Program-program pencegahan yang menggalakkan tingkah laku makan yang baik dan sihat perlu dilaksana dan dinilai.

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This work may not have materialized without the understanding, sacrificing and love, from my husband, Lee YT. Last but not least to my loving parents, I am very grateful to them for their continued moral support, encouragement and belief in me as I engaged in this research.

I certify that an Examination Committee has met on 13 March 2008 to conduct the final examination of Soo Kah Leng on her Doctor of Philosophy thesis entitled "Factors Contributing to Disordered Eating Behaviours and At-Risk of Eating Disorders among Adolescent Girls in Kelantan, Malaysia" in accordance with Universiti Putra Malaysia (Higher Degree) Act 1980 and Universiti Putra Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the student be awarded the degree of Doctor of Philosophy.

Members of the Examination Committee were as follows:

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Date: 26 May 2008

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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Date: 12 June 2008

DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously and is not concurrently submitted for any other degree at Universiti Putra Malaysia or at any other institution.

SOO KAH LENG

Date: 2 May 2008

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Many lifestyle habits are established during adolescence. The continuous sequence of physical and psychological adaptations during adolescence had been reported to have a significant influence on the social and behavioural aspects of life for this age group (Hetherington, 2000). At the same time, adolescents are at an intense anabolic phase whereby they require a diet high in nutritional quality with an adequate amount of energy, vitamins and minerals to support their physical growth. Therefore, total nutrient needs during adolescence are higher than at any other phase in the lifecycle; and failure to consume an adequate diet during adolescence can affect growth and delay sexual maturation (Story, 1992). In addition, unhealthy eating behaviours during adolescence can negatively affect health, contribute to chronic diseases later in life and are difficult to change once established (Evers *et al.*, 2001). Thus, it is essential for adolescents to adopt healthy eating and to avoid poor eating habits as well. In order to achieve these goals, studies should be carried out to find explanations for adolescents' eating behaviours to explore relationships that exist between the behaviours and other variables.

Body weight concerns especially the prevalence of overweight and obesity are becoming increasingly important public health issues. Concern with body weight and shape is extremely common during adolescence. Over the last three decades, there

has been a strong pressure on adolescent girls to accept the social norm that thinness is the key to success, health and happiness (Packard & Krogstrand, 2002). At the same time, the prevalence of being overweight has increased worldwide among adolescents in developed as well as developing countries (Troiano *et al.,* 1995). In addition to being exposed to the health risks of obesity and poor nutrition, adolescents are being exposed to the unrealistically thin beauty ideal that is portrayed in the media (Morris & Katzman, 2003). Due to the dubious and unreliable health and nutrition information conveyed by the media, many adolescents feel the cultural pressure to be thinner than is required for good health. It is not surprising, therefore, that strategies aimed at changing one's weight and shape are extremely prevalent in the current society. Through media exposure, adolescents are exposed to a number of ways to lose weight and achieve the thin ideal. They may try to achieve this goal through poor or even dangerous nutritional choices.

Wichstrom (1999) found that concerns about body shape and weight became a primary focus during early adolescence, a time of dramatic physical changes. Research about body image generally found that adolescent girls are more dissatisfied with their bodies than adolescent boys (Norimah *et al.*, 2005; Sweeting & West, 2002). Females at 12 and 13 years of age become concerned with the increase in weight as well as with body shape; whereas between 12 to 16 years of age, dissatisfaction with hip measurement increases and slimness of the hips becomes the most desired feature (Davies & Furnham, 1986). Adolescence is a time of body dissatisfaction and how the individual copes with this dissatisfaction may be the critical process in determining whether normal or disordered eating behaviour develops (DeCastro & Goldstein, 1995). Besides dissatisfaction with body shape and

weight, adolescents are at risk of low self-esteem as well which is influenced by many factors including physical development (O'Dea & Abraham, 1999).

Unhealthy weight loss efforts such as dieting and extreme exercise may lead adolescents to develop body image disturbances, nutritional inadequacies, emotional problems, and the inappropriate use of medication (Robinson *et al.,* 2001; Smolak *et al.,* 2001). Besides, dieting is a significant health concern since it was reported to have significant relationship with eating disorders (Patton *et al.*, 1999). In fact, eating disorders have become the third leading chronic illness among adolescent females in developed countries (Fisher *et al.,* 1995). The obsession with weight loss through dieting may cause an unbalanced nutrition both qualitatively and quantitatively (Rolland-Cachera *et al.*, 2000). In addition, dieting behaviour in adolescents can affect metabolism, retard growth and development, and can be a risk factor for binge eating, amenorrhea, and the increased use of drugs and smoking (Packard & Krogstrand, 2002).

Olmsted *et al.* (2001) revealed that dieting was the most prevalent weight loss behaviour among Canadian adolescent females aged 12 to 18 years, whereas other unhealthy weight loss behaviours such as self-induced vomiting, binging and purging increased gradually throughout adolescence. The study showed that disordered eating attitudes and behaviour were present in more than 25% of Ontario schoolgirls, particularly those with higher body mass index (BMI) values and these attitudes and behaviour were more common in females aged 15 to 18 years. It has been suggested that the age of onset of disordered eating behaviour may be decreasing (Kaltiala-Heino *et al.,* 1999; Neumark-Sztainer *et al*, 1998); whereby studies revealed that

dietary restraint as well as binge eating, self-induced vomiting and purging were prevalent among females by the age of 15 years (DeCastro & Goldstein, 1995; Jones *et al.*, 2001). According to Herzog and Copeland (1985), by the age of 15 years disordered eating attitudes and behaviour were as frequent as those reported in older high-risk groups, such as college and university students. Meanwhile, Edlund *et al.* (1994) described the period between the ages of 11 and 14 years as characterized by an increase in food concerns among girls.

One should keep in mind however, dieting or restrained eating as an effort to weight management has benefit but also detrimental to the physical and mental well being of adolescents. The child-to-adult adiposity relationship is now well documented since overweight during adolescence is a risk factor in long-term health problems (Parsons *et al.*, 1999). So, there is a need to control body weight during adolescence by increasing one's activity level and restraining his or her eating. But, over restriction of food intake during adolescence can adversely lead to negative impacts on physical and psychological changes.

The present study on a population of female adolescents attending seven national secondary schools in Kelantan aimed to provide a general picture of nutrition, body image and eating behaviours that characterize adolescents. It examined relationships between personal factors (biological, psychological and cognitive) and socio-environmental factors (parental socioeconomic status and influence of mother, peer and media) with disordered eating attitudes and behaviours of females aged around 16 years.

1.2 Statement of the Problem

Behavioural patterns acquired during adolescence can significantly affect an adult's lifestyle. Thus, adolescence offers unique opportunity to positively influence the adoption of healthy eating which could be sustained throughout life (Story *et al.*, 2002). Adolescents' eating behaviours are associated to a complex combination of variables such as physiological needs, body image, nutrition knowledge, food preferences, parental practices, peer pressure, media, social norms, fast foods, and personal experiences (Cusatis & Shannon, 1996; Farthing, 1991). However, not much is known about the factors that influence adolescents' eating behaviours in this country.

There are a number of studies conducted in Malaysia regarding prevalence of body image distortion and disordered eating among female adolescents. These studies demonstrated 38.0% to 39.0% of female adolescents had inaccurate perception of their body weight status (Enita, 2001; Pon, 1999; Siew, 2003); whereas 18.7% to 25.5% of female adolescents were identified as at-risk of eating disorders (Mohd Nasir & Fong, 2003; Nair, 2001; Sharina, 2004). However, only 3.0% of female students in a local university (Enita, 2001) and 13.7% of female students in 2 colleges in Kuala Lumpur (Kee & Poh, 2003) were identified as having the same problem. Another report stated that 29.5% of rural female adolescents had inaccurate perception in their body weight status, 9.1% and 3.4% were at risk of having mild and severe eating disorders respectively (Edwina, 2002). A study by Khor *et al.* (2002) among 180 Malaysian university students showed that psychological and emotional factors have a significant impact on the students' eating behaviour.