Study of Behavioral Physiology of Diabetics Eating Habit, Life Style and Obesity

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Abstract – Eating habit has been a significant issue of the psychological status of university students. The goal of this research was to research food habits & their subsequent social and psychological factors in medical students. 132 pre-clinical medical students at a Malaysian university performed a cross-sectional analysis. The questionnaire was self-administered, that included social demographic, anthropometric, eating & psychosocial variables. Average age (±SD) was 22.7 (±2.4) & age (18 to 30) years of respondents. More than half of them had daily dinner & breakfast (57.6% & 56.1%). Most (73.5%) eat fruit less than 3 times a week, 51.5% eat food twice or more a week, 59.8% drink water less than 2 litres a week. Age and 'feeling good' in multivariate research have been significantly related to the food habits score (p<0.05). Most students have good eating habits in this study. Social & psychological factors were significant influences for medical students' eating habits.

Key Words – Psychological, Life, Habit, Obesity, Behavioral

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INTRODUCTION

Food and eating are pleasurable and essential to life. However, the abundance of palatable food items in post-industrialized societies has created problems both at the individual and societal levels. The rapidly increasing prevalence of obesity worldwide is a major public health problem, and many people are struggling to prevent weight gain or are trying to lose weight. In 2007, 66% of men and 53% of women in Finland were overweight, i.e. had a BMI of 25 kg/m² or higher, and 21% were obese (BMI _ 30 kg/m²) The current obesogenic environment has been considered to be a causal factor underlying the obesity epidemic: technological development has reduced the need for physical activity, and food is more plentiful, accessible and palatable than ever before. Together, these two factors cause excess energy intake compared to energy expenditure, leading to weight gain. However, not all individuals gain weight, and this variability between individuals has generated a vast amount of research from perspectives ranging from genetic and biological to social and cultural. Body weight is highly heritable, and from 60% to 80% of within population variation in weight has been estimated to be due to genetic differences between individuals. It is well known to have been correlated with many adverse health outcome(s), such as weight gain, obesity, impaired studies have cardiorespiratory & muscular function, poor metabolic health, inflammation, insulin resistance, & T2DM, decreased cognitivity. cognitive disorders and other disorders are also associated with a reduction in health. A great deal of research, has shown that healthy lifestyles are significantly correlated with better health & well being. In addition, recent lifestyle monitoring given that chronic physical inactivity from young to adult is related to increased risk of adult blood glucose impairment.

The analysis concluded that good eating habits should be encouraged among young adults in order to achieve healthy nutrition. Chin&Nasir (2009) has shown that eating skipping is one of the unhealthy eating behaviours of Malaysian teenagers, especially when they are having breakfast, snacking and different weight loss dieting behaviours. The analysis found that healthy eating is important for future health. The goal of the existing analysis to evaluates the behaviour & associated factors of eating habits, with a focus on psychological factors among students of a medical college in Malaysia.

PSYCHOLOGICAL EATING STYLES

Several psychological theories were developed to explain overeating and the development of obesity in the second half of the 20th century, and psychosomatic (Kaplan & Kaplan, 1957; Bruch, 1973), externality (Schachter & Rodin, 1974) and restraint theories (Herman & Polivy, 1984) have been the most influential. These theories introduced the concepts of emotional eating, external eating and restrained eating, respectively.

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Strict food implies a propensity to reduce the consumption of food cognitively in order to lose weight or stop weight growth, whereas emotional food could be characterised as a propensity towards food in response to negative emotional conditions & external food as a susceptibility towards food in response to external food indications.

EMOTIONS, COGNITIVE CONTROL, EATING AND OBESITY

The influence of cognitive control and emotions on food intake and obesity has been subject to considerable scientific interest, which is also evident in the early research on psychological eating styles. In this section, the effects of emotions on eating and the theoretical models developed to explain the psychological processes involved are discussed. These theories vary in the emphasis that they place on the role of cognitive control.

Emotions arise as a response to personally relevant events and are multifaceted phenomena that involve changes in the domains of subjective experience, behaviour and physiology (Gross & Thompson, 2007). Various terms have been used to refer to emotional processes in the literature, such as affect, emotion, stress and mood. Both physiological and psychological processes are involved in the influence of emotions on eating and weight changes, but this study concentrates on the latter processes.

DIETARY HABITS AND OBESITY: THE ROLE OF PSYCHOLOGICAL EATING STYLES

Numerous experimental analysis has examined psychological eating styles in relation to actual food intake. However, a limitation is that the results are based on individuals' behaviour in a laboratory context for a short period of time. Further, most of the experimental studies related to psychological eating styles have involved female university or college students. Thus, observational studies are needed in addition to experimental ones to examine the relevance of the

phenomenon found in a laboratory context to the general population. Results from previous non-experimental studies among adults exploring the associations of restrained and emotional eating (assessed by means of the TFEQ or DEBQ) with dietary habits and obesity are reviewed next. These are mainly cross-sectional studies, but a few prospective studies also exist. Restrained eating has again gained the most research attention, while specific overeating tendencies, such as emotional eating, have received less interest.

Restrained eating has consistently been related to healthier dietary habits: for example, individuals with a higher level of restrained eating reported consuming fish, dairy products, fat-reduced foods and vegetables more often and sugar and French fries less frequently in a community-based cohort of French adults (de Lauzon et al., 2004). With respect to energy and macronutrient intake, restraint has been related to lower total energy and fat intake, and to higher protein intake (Lindroos et al., 1997; Lluch et al., 2000; Provencher, Drapeau, Tremblay, Despres, & Lemieux, 2003; de Lauzon et al., 2004).

METHODOLOGY

Design & population

This cross-sectional research was carried out by a university university with uniform sampling of 140 medical students in Malaysia. Students from the first year's faculty were confronted in class following agreement with the course coordinator & lecturers. Questionnaire were explained orally & writing in the attachment to the questionnaire on goals & benefits of the research. Those who wanted to participate received written permission. The University Ethics Committee (approval number: JMS5/0182) approved the report.

Study instruments

We also utilized an autonomous eating behaviours questionnaire adopted in previous published research. There were three sections of the questionnaire. The first section included issues relating to population details such as age , gender, levels of education, marital status, ethnicity & living conditions. BMI and lifestyle; like smoking , alcohol consumption & BMI

Exercise in this part has also been included. The second part concerns the way food is eaten & type of meal eaten (10 things, e.g. meal duration, meal type, fruit & vegetable consumption, daily intake of water, fast food consumption, etc.). The third part contained psychological questions affecting respondents' dietary habits. Issues from the CES (Compulsive Eating Scale) validated for measuring uncontrolled eating habits among students were selected; the subjects involved in the study were 'eating alone,' 'feeling out of control in eating,' 'eating too much until stomach is hurt,'

'Eat for feeling upset or anxious,' 'eat for boredom,' and 'eat for happiness.' 'Yes' or 'No' were the responding choices.

Statistical analysis

In order to analyse the results, the Statistics Package for Social Sciences (SPSS) version 16.0. The weight of the BMI was determined by kilos divided into square metres by height (kg / m2). Centered auf BMI cut-offs for Asian population of WHO for this analysis, BMI<18.5 kg / m2 were classified as underweight; the usual range was 18 5–22 9 kg / m2, the obese Class II

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was 23.0–27.4 kg / m2, and the obese Class I, 27.5–34.9 kg / m2 was classified as obese, the obese Class II was classified as obese, & 40 kg / m2 as obese Class III. The study of exploratory factor factors was conducted using principal components methods with varimax rotations to verify the validities of CES among the Malaysian population, & internal consistency of scale was checked utilizing the Cronbach alpha. Each food item has scored (1) when the answer is safe or (0) when it is not safe. The total score (minimum = 0 & maximum = 10) was summarised. A higher score on eating habits showed improved eating habits. All variables were evaluated descriptively. T-test & ANOVA were used for the comparison of mean food preferences between socio-demographic variables. Standard distribution checks were also carried out for the overall score of eating habits. Hierarchical linear multivariate regression was utilized to obtain variables significantly correlated with the score of eating habits. The first phase was entered into age, mother's work status, alcohol consumption, exercise & smoking status. The second stage consists of five out of six eating behavioural psychological causes. Multicollinearity between different variables has been reviewed.

RESULTS

Socio-demographic characteristics The survey was performed at a rate of 94,0% by hundred & 32 out of 140 students. The majority were women (70.5%) & over 22 years of age (61.4%). Many were Malaysians (61.4%) and Indians and Chinese (of) (31.8%) collectively & 2.3%. As far as maternity education is concerned 44.7% had tertiary education, 37.9% had secondary education or less, while the remainder earned non-formal training (17.4%). In terms of dad's schooling, most had tertiary (51.5%), 33.3% had high school or less &15.2% had non-formal education. The bulk of mothers did not work (57.6%). The bulk of the households had average RM 3,000 (59.1%) were living with their families on a monthly basis (64.4%). The majority had rejected (94.7%) smoking & (97%) alcohol use. Most of them exercised regularly (78%), but some did not (22%). About half of them (53%) had regular BMIs, 22,7% had weight loss, 16,7% had pre-obesism, & 7,6% had obesity in class I (Table 1).

Table 1 Socio-demographic characteristics of participants (n= 132)

Characteristics	N	%
Gender		
Male	39	29.5
Female	93	70.5
Age		
18-21	51	38.6
≥ 22	81	61.4
Ethnicity		
Malay	81	61.4
Chinese	3	2.3
Indian	42	31.8
Others	6	4.5
Mother's education level		
Non-formal education	23	17.4
High school or less	50	37.9
Tertiary education	59	44.7
Father's education level		
Non-formal education	20	15.2
High school or less	44	33.3
Tertiary education	68	51.5
Monthly household income (RM)		
≤3000	78	59.1
3001-4999	22	16.7
≥5000	32	24.2
Living arrangement		
Living alone	47	35.6
Living with family	85	64.4
Body Mass Index (BMI)*		
Underweight (< 18.5)	30	22.7
Normal (18.5 – 22.9)	70	53.0
Pre-obese (23.0-27.4)	22	16.7
Obese class I (27.5-34.9)	10	7.6
Mother working		
Yes	56	42.4
Smoking		
Yes	7	5.3
Alcohol		
Yes	4	3.0
Regular exercise		
Yes	103	78

* BMI is calculated based on WHO criteria for Asian population.

Eating habits

About half of them have frequently eaten and had breakfast (57.6%, 56.1%). Approximately 57.6% had fewer than three snacks weekly & 42.4% had snacks three or more times weekly. Three or more days a week the bulk consumed vegetables and legumes (81.8%). Nearly half (51.5%) of the fruits ate less than three times a week, with the remainder (48.5%) consuming 3 or more times a week. Most had fried food two or more days a

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week (73.5%), while 26.2% took food less than two times. The majority (78.8%) rarely consume fast food and eat with family or friends every day (81.1%). Most foods had a healthy selection (60.6%), whereas 18.9% preferred meat & 5.3% chosen vegetables. Most had a daily water consumption of less than 2 litres (59.8%) (Table 2). The alpha Cronbach compulsive dietary scale (CES) alpha coefficient was 0.80 psychological factors influencing the eating behaviour. The analyses of the exploratory factor generated one factor with values above 1 (3.1). 51.0 percent of the variance reflected the two-factor solution. The load factor was between 0.41 and 0.50.

Almost 48, 5% ate alone, 53, 8% ate till their stomache hurts, 53% ate due to feeling up or nervous, and 59,1% ate because of feeling bored. Food is not fully regulated by 62,1%. The majority was happy (80,3%) (table 3). The majority was happy. Association of food and socio-demographical factors. The average overall eating habit score was 6.3(SD± 1.8) & ranged from 2 to 10 for all participants. Mean with the total score (SD) of eating habits, the groups of the sample were compared. The mean was 6.68(SD±1.66) and 5.86 (SD±1.87), respectively, for those aged 22 & 18–21 years, & this was significant (P=0.01). This difference was significant. A big difference in food preferences

Also found were ratings of 4,86 (SD± 1,57) & non-smokers, 6,45 (SD±1,76), (p = 0,02), & 4,25 (SD±2,06), and those not consuming alcohol, 6,43(SD±1,74), and p = 0,02. Score also was found between the smokers & smokers. There was no important connexion between eating habits & other socio-demographic factors (Table 4).

Table 2 Eating habits between participants (n = 132)

Characteristics	N	%
Regular meals		
Yes	76	57.6
No	56	42.4
Daily breakfast		
Yes	58	43.9
No	74	56.1
Frequency of daily meals		
Less than three times	79	59.8
Three or more times	53	40.2
Frequency of having snacks (per week)		
Less than three times	76	57.6
Three or more times	56	42.4
Weekly consumption of vegetables & legumes		
Less than three times	24	18.2
Three or more times	108	81.8
Weekly consumption of fruits		
Less than three times	68	51.5
Three or more times	64	48.5
Weekly consumption of fried food		
Less than twice	35	26.5
Twice or more	97	73.5
Consumption of fast food		
Often	28	21.2
Rarely	104	78.8

Meals with friends & family		
Daily	107	81.1
Not daily	25	18.9
Type of food consumed		
Mainly meat	25	18.9
Mainly vegetables	7	5.3
Carbohydrate (rice, bread)	20	15.2
Variety of food in balance	80	60.6
Water intake (liters/day)		
< 2	79	59.8
≥2	53	40.2

Table 3 Psychological Factors affect the eating habits of respondents (n = 132)

Psychological factors	Yes n (%)	No n (%)
Eat because of feeling lonely	64 (48.5)	68 (51.5)
Feel completely out of control when it comes to food	62 (42.1)	50 (37.9)
Eat as much until stomach hurts	71 (53.8)	61 (46.2)
Eat because of feeling upset or nervous	70 (53.0)	62 (47.0)
Eat because of feeling bored	78 (59.1)	54 (40.9)
Eat because of feeling happy	106 (80.3)	26 (19.7)

Table 4 Association among eating habits score & categorical variables (n = 132)

Categorical variable		Mean(SD)	pvalue
Gender	Male	6.28 (1.82)	
	Female	6.40 (1.77)	0.73
Age	18-21	5.86 (1.87)	
	≥ 22	6.68 (1.66)	0.01
Ethnicity*	Malay	6.31 (1.81)	
	Chinese	8.33 (1.53)	
	Indian	6.33 (1.75)	
	Others	6.33 (1.51)	0.29
Mother's education level *	Non-formal education	6.99 (1.56)	
	High school or less	6.32 (1.58)	
	Tertiary education	6.19 (1.99)	0.25
Father's education level *	Non-formal education	7.05 (1.76)	
	High school or less	6.32 (1.68)	
	Tertiary education	6.19 (1.99)	0.16
Monthly household income*	≤3000	6.36 (1.71)	
	3001-4999	6.23 (1.54)	
	≥5000	6.47 (2.11)	0.88
Living arrangement	Alone	6.40 (1.79)	
	With family	6.30 (1.78)	0.75
Mother working	Yes	6.04 (1.61)	
	No	6.61 (1.87)	0.07
Smoking	Yes	4.86 (1.57)	
	No	6.45 (1.76)	0.02
Alcohol	Yes	4.25 (2.06)	
	No	6.43 (1.74)	0.02
Regular exercise	Yes	6.51 (1.81)	
	No	5.86 (1.60)	0.09
Body Mass Index (BMI)*	Underweight (< 18.5)	6.23 (1.57)	
	Normal (18.5 – 22.9)	6.47 (1.90)	
	Pre-obese (23.0-27.4)	6.68 (1.67)	
	Obese class I (27.5-34.9)	5.30 (1.49)	0.20

* One way ANOVA test was used to compare mean between categories.

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Association amongst food habits & psychic factors A comparison between those who replied 'yes' & respondents on each item of psychological factors was made between the total score on eating habit & (SD). Mean total food habit score of 5.95 (SD ±1.78) & 6.75 (SD ±1.70) (p = 0.01) for the lonely eaters. The mean was 6.06 (SD ±1.76) for those who ate till the stomach was hurt and 6.72 (SD ±1.74) (p=0.03), respectively. Important among those who ate in disorders and who didn't, respectively, have been 6.07 (SD ± 1,75) & 6.69 (SD ño 1,77) (p = 0.04). Mean was 5.91 for those who bored (SD ±1.67) & 7.02 (SD ± 1.74) (p<0.01) for those who did not bored (Table 5).

In the first stage were entered factors linked to eating habits during the hierarchical linear multiple regression Period, mother's working situation, alcohol intake, exercise & smoking. The second step was to add the following factors: 'eat alone, feel out of control, eat until the stomach has a hard time, eat because of the upset, feel anxious and eat because I feel happy.' The second step included the following factors: The following factors: The first stage results showed that age was significantly linked to a score of eating habits (p = 0.006). The second stage was related to the dietary habits (p=0.009), alcoholic intake (p=0.037) and satisfaction (p=0.009) (Table 6). Variables were correlated with age. The overall model (p<0.001) was important and made up 19% of the variance. Between variables there was no multi-linearity.

Table 5 Association of eating habits score & psychological factors (n = 132)

Psychological factors	Mean(SD)		
	Yes	No	p value
Eat because of feeling lonely	5.95 (1.78)	6.75 (1.70)	0.01
Feel completely out of control when it comes to food	6.32 (1.05)	5.44 (1.06)	0.19
Eat so much until stomach hurt	6.06 (1.76)	6.72 (1.74)	0.03
Eat because of feeling upset or nervous	6.07 (1.75)	6.69 (1.77)	0.04
Eat because of feeling bored	5.91 (1.67)	7.02 (1.74)	<0.01
Eat because of feeling happy	6.31 (1.03)	6.56 (1.53)	0.10

Table 6 Effects of the multiple linear hierarchical regression; score of eating habits (n=132)

	Step 1			Step 2		
	B	Beta	p value	B	Beta	p value
≥ 22 years old	0.675	0.270	0.006	0.679	0.272	0.009
Mother working	0.344	0.006	0.204	0.281	0.079	0.345
Drinking alcohol	1.214	0.140	0.159	2.390	0.202	0.037
Exercise	0.659	0.140	0.080	0.540	0.128	0.121
Smoking	1.908	0.135	0.290	0.996	0.040	0.073
Eat because of feeling lonely				0.279	0.061	0.405
Eat because of feeling out of control when eating				0.544	0.140	0.096
Eat so much until stomach hurt				0.603	0.111	0.199
Eat because of feeling upset or nervous				0.080	0.110	0.270
Eat because of feeling happy				0.091	-.208	0.086

This reference group for age is '18-21 years'; for exercise is 'no'; for all other variables is 'yes'.

CONCLUSION

Most students in the study typically had balanced eating behaviours except for food frequency, fruit use, water intake, and fried food consumption. Social & psychological influences have been significant factors in medical students' eating habits. The promotion of good eating habits & behaviours and appreciation for nutritious conventional food should be promoted in medicine students. It is proposed that

a greater size of samples for medical students, including students from various medical colleagues from all over Malaysia, are included in future study.

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