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Relationship Between Eating Behaviors, Self Esteem and Academic Achievement among Lower Secondary School Students in Meru Klang, Malaysia

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ABSTRACT

This study attempted to investigate the relationship between eating behaviors, self esteem and academic achievement among lower secondary school students. Cross sectional study was conducted among 274 respondents aged 13 to 15 years old. A questionnaire comprising sociodemographic items, Eating Behavior Patterns Questionnaire (EBPQ), Rosenberg Self Esteem Scale and exam result were taken. Significant relationship were found between low fat eating behavior with academic achievement with (p = 0.008). There was no significant association between meal skipping, emotional, snacking and convenience eating behavior and self esteem toward academic achievement with (p = 0.412) (p = 0.243) (0.05) and (p = 0.812), respectively. Logistic regression analysis showed that student with low fat eating behavior is less likely to have low academic achievement. In conclusion, further research need to be done in order to explained in detail on these issues.

Key words: Academic achievement, eating behaviors, self esteem, gender, lower secondary school children

INTRODUCTION

Academic performance were influenced by multiple factors (Ong *et al.*, 2010) includes breakfast habit (Kim *et al.*, 2003) eating behaviors, environmental factors, familial, genetic, emotional and social influences. Apart of that, iron deficiency is also one of the problem that was associated with global health of schoolchildren which can impaired their cognitive development (El Hioui *et al.*, 2008). Eating behavior might related to the academic achievement and self esteem of the students and balanced diet is important not only in maintaining physical health but also in promoting emotional well being and psychosocial functioning (Fu *et al.*, 2007). There is might be relationship between eating behaviors, self esteem and academic achievement among students.

The feeding style and mealtime pattern is also important and will give positive impact to diet quality (Ayranci *et al.*, 2010; San Juan, 2006; Taras, 2005; Rampersaud *et al.*, 2005; Lopez-Sobaler *et al.*, 2003). Ozdogan *et al.* (2010) stated that most of female students had three time meals per day and the major reason for skipping meals especially breakfast was lack of time.

There is differences of daily fat intake due to differences in socio-economical factors (Zabut, 2005). Khattak *et al.* (2002) in his study found that students was at risk to have specific nutrient deficiencies when they have lower dietary intake of fibre and most of students met energy requirement through dietary fat intake. Chin and Nasir (2009) found that breakfast was the main meals that was skipped and there is no differences between socio- demographic and meal skipping behaviors.

Meal skipping via omission and inadequate breakfast may contribute to poorer food choice throughout the rest of the day and then will interfere school children ability to learn (San Juan, 2006; Taras, 2005; Rampersaud *et al.*, 2005). Kim *et al.* (2005) shown that, poor dietary patterns as evidenced by high frequency of skipping meals (especially breakfast) and high frequency of snacking or taking irregular meals and low intake of animal foods and fruits and these will lead to poor growth and academic achievement. Sanlier and Unusan (2007) stated that male students eat larger quantities of foods than females. Khattak and Khan (2009) found that the students which have imbalance intakes of energy intakes especially from macronutrients are at high risk to have malnutrition.

Akdevilioglu and Gumus (2010) in their study reported the prevalence of abnormal eating attitudes and behaviors among students. It was stated about 5.9% students has abnormal eating behaviors and there is no positive effects after nutrition education was done. Musingo and Wang (2009) in their study focus on the relationship between eating habits and socio-demographic characteristic. The result suggest that students needs proper intervention in order to help improving their awareness on healthy eating behaviors.

In the other hand, in the psychological context, Tremblay *et al.* (2000) and Naderi *et al.* (2009) found that the self esteem was positively related to academic achievement with females had lower self esteem than males. Mayer *et al.* (2009) and Hoare and Cosgrove (1998) found that high level of eating behavior problem is associated with low level of self esteem and show that self esteem was associated with high emotional eating.

The role of eating behavior and self esteem in academic achievement among children is poorly understood. Furthermore, the relationship between eating behavior and the level of self esteem is unclarify and poorly understood. There is still lack of study were done in related to eating behaviors, self esteem and academic achievement. Hence, through this study the relationship between eating behavior and self esteem on academic achievement among school children will be studied.

MATERIALS AND METHODS
Study design: This cross sectional study was designed in order to investigate the relationship between eating behaviors, self esteem and academic achievement among lower secondary school children at Sekolah Agama Menengah Nurul Iman (SAMNI), Meru Klang. Informed consent was obtained from their parents or caretakers.

Study subjects: A total of 274 subjects (N = 274, male = 123 (44.9%) and female = 151 (55.1%)) aged between 13-15 years old participated in this study. Exclusion criteria were participants with any chronic diseases, aged less than 13-15 years old and not in a good health.

Data collection: The data was collected by using questionnaire. The selected student was asked to answer the questionnaire. The questionnaire were self administered answered by them. The time

given for them is about 30 to 45 min. The respondent were accompanied by researcher in order to help the respondent to answer the questionnaire. If there is any inquiry by the respondent the researcher help them. After they done, the questionnaire were checked in order to avoid any uncompleted answer. The questionnaire then immediately return back to them if uncompleted. After all questionnaires is completed, the questionnaire being collected for further analysis. A pilot study was performed to test the questionnaire.

Data measurement
Eating behaviors: A set of Eating Behavior Patterns Questionnaire (EBPQ)-adapted from Schlundt *et al.* (2003) were asked to the student to assess the eating behavior. It consist of few part of subdivision question includes low fat eating behavior (11 total questions), snacking and convenience eating behavior (10 total questions), emotional eating behavior (8 total questions), meal skipping eating behavior (7 total questions). Each question has the score 1 to 5. Strongly agree (5), agree (4), Neutral (3), Disagree (2) and strongly disagree (1). Total the scores for each section were divided by total number of questions included in that section. If the average is 4 or 5 it means it have the characteristics of that eating behavior.

Self esteem: Self esteem were measured by using Rosenberg self esteem scale (Rosenberg, 1965). It consist of 10 items and were answered on 4 point from 0 (strongly disagree), 1 (disagree), 2 (agree), 3 (strongly agree). Score range from 0-30 with higher scores reflecting high self esteem.

Academic achievement: For the purpose of this study, academic achievement was assesed by taking the grades of 4 core subjects from the test. This includes Malay, English, Sciences and Mathematics. The more score the good their academic achievement. At the beginning all 4 subject were taken but after considered the alpha value for reliability test, English subject were removed. Furthermore, majority of participants were comes from Malay students. As English is not the mother language of students in Malaysian population, so it is removed it from the subjects (Ong *et al.*, 2010).

A = 5	B = 4	C = 3	D = 2	E = 1
80-100	79-60	50-59	40-49	0-39

Statistical analysis: Data entry and statistical analysis was carried out using SPSS, version 18.0 (SPSS, 2010). Hypothesis testing was completed using chi-squared or Fisher's exact test. For the categorical variables results are presented as the frequency and its percentage and for numerical variables results are presented as the Mean±SD. In order to determine the difference between eating behavior, self esteem and academic achievement among gender, Independent sample t-test or Mann-Whitney were used. Univariate analysis simple logistic regressions were applied to determine associated factors for academic achievement. However, for simple logistic analysis were presented with adjusted crude ratio with 95% confidence intervals, Wald value and p-value. Significance level was set at $\alpha = 0.05$.

RESULTS
Table 1 show that demographic data of the participants. About 274 (n = 274, Male = 123 (44.9%) and Male = 151 (55.1%) participants was involved in this research. All participant aged

Table 1: Demographic data of participants from Sekolah Menengah Agama Nurul Iman, Meru Klang

	n	%
Gender		
Male	123	44.9
Female	151	55.1
Age		
13	100	36.5
14	100	36.5
15	74	27.0
Race		
Malay	274	100
Others	0	0
Nationality		
Malaysian	274	100
Others	0	0
Religion		
Islam	274	100
Others	0	0
Parent's monthly salary		
RM 500-900	35	12.8
RM 1000-1499	65	23.7
RM 1500-1999	43	15.7
RM > 2000	131	47.8
Father's academic achievement		
Not going to school	0	0
Primary school	19	6.9
Secondary	168	61.3
School college/university	87	31.8
Mother's academic achievement		
Not going to school	3	1.1
Primary school	16	5.8
Secondary	180	65.7
School college/university	75	27.4
Father's occupation		
Government	78	28.5
Private	109	39.8
Own business	76	27.7
Didn't work	11	4
Mother's occupation		
Government	78	28.5
Private	35	12.8
Own business	23	8.4
Didn't work	138	50.4

Mean±SD: 13.9±0.793, All (n = 274), n: No. of subjects; %: Percentage, SD: Standard deviation value

around 13 to 15 years old (13 = 100 (36.5%), 14 = 100 (36.5%), 15 = 74 (27%). From the data 35 (12.8%), 65 (23.7%), 43 (15.7%) and (131) 47.8% of the parent's have monthly salary about RM 500-900, RM 1000-1499, RM 1500-1999 and RM>2000, respectively. For father's educational status, 19 (6.9%) have primary school educational level, 168 (61.3%) secondary school and 87 (31.8%) college/university. In the other hand, about 3 (1.1%) of their mother are not have any education *et al*, 16 (5.8%) having primary school, 1 80 (65.7%) secondary school and 75 (27.4%)

college and university. Out of 274 participants, 78 (28.5%), 109 (39.8%) and 76 (27.7%) of their father work in government sector, private sector and having an own business, respectively while 11 (4.0%) did not work/retired. In addition, 78 (28.5%), 35 (12.8%) and 23 (8.4%) of their mother work in government sector, private sector and having an own business, respectively while 138 (50.4%) did not work/retired.

Chi-squared analysis was performed in order to see the association between eating behavior and academic achievement among students. There was a significant association between low fat eating behavior and academic achievement with $p = 0.050$. In contrast there is no significant between emotional eating behavior, snacking and convenience and meal skipping eating behavior with level of academic achievement with $p = 0.243$, $p = 0.05$ and $p = 0.412$, respectively as listed in Table 2.

Chi-squared analysis also was done in order to see the relationship between self esteem and academic achievement. It was found that there was no significant association between self esteem and academic achievement among students with $p = 0.483$ (Table 3).

Table 4 are comparing numeric characteristic between male and female group among 274 total of participants. The independent t-test was conducted in order to compare the mean of snacking and convenience eating behavior and academic achievement among male and female students. There was a significant difference of snacking and convenience eating behavior ($p = 0.017$) with higher male are having snacking and convenience eating behavior (2.82±0.48) as compared to female (2.70±0.50). The result also showed that there was differences of meal skipping eating behavior between male and female in which female is more higher (3.1±0.6) having meal skipping as compared to male (3.0±0.51) ($p = 0.005$). In addition, it was found that there was a significant differences of self esteem between male and female students with ($p = 0.009$). The result found that male student (18.83±3.42) had higher level of self esteem score as compared to female students (17.64±3.80). There is no significant difference in low fat eating behavior, emotional eating behavior and academic achievement was found between male and female student.

Table 5 shows factors associated with level of academic achievement by using simple logistic regression analysis. Only low fat eating behavior was significant associated with academic achievement. It was found that student with low fat eating behavior is less likely to have lower academic achievement. However, there was no association between snacking and convenience eating behavior, meal skipping eating behavior and emotional eating behavior on academic achievement.

Table 2: Relationship between eating behaviors and academic achievement

Eating behaviors	χ^2 statistic (df)	p-value
Snacking and convenience	3.842 (1)	0.050
Emotional eating	1.362 (1)	0.243
Low fat eating	7.055 (1)	0.008*
Meal skipping	0.674 (1)	0.415

*Significant value is at p<0.05

Table 3: Relationship between self esteem and academic achievement

Eating behaviors	χ^2 statistic (df)	p-value
Self esteem	0.492 (1)	0.483

Table 4: Independent t-test; comparison numeric characteristic respect to gender

Variable	Male (n = 123)	Female (n = 151)	t-statistic (df)	p-value
Comparing numeric characteristic between male and female group				
Snacking and conveniences eating behavior	2.82±0.48	2.70±0.50	2.41 (272)	0.017*
Meal skipping eating behavior	3.00±0.51	3.10±0.60	2.86 (272)	0.005*
Low fat eating behavior	3.38±0.43	3.44±0.44	1.32 (272)	0.188
Emotional eating behavior	3.08±0.47	3.13±0.60	0.83 (272)	0.407
Self esteem score	18.83±3.42	17.64±3.80	2.64 (272)	0.009*
academic achievement	3.50±0.87	3.63±0.98	1.10 (272)	0.270

Values are as Mean±SD, *Significant at p<0.01 using t-test

Table 5: Associated factors to academic achievement of participants by using simple logistic regression analysis

Factors	Crude odds ratio	Wald	95% CI	df	p-value
Low fat eating behavior	1.026	6.640	0.164-0.782	1	0.010*
Snacking and convenience eating behavior	1.964	2.850	0.014-1.370	1	0.091
Emotional eating behavior	0.657	1.320	0.629-5.921	1	0.251
Meal skipping eating behavior	0.410	0.670	0.248-1.776	1	0.414
Self esteem	0.253	0.500	0.634-2.613	1	0.484

* Significant value at p<0.05

DISCUSSION

Numerous factors are known to affect the academic performance of students. Children with a greater number of unhealthful eating patterns, poor health were more at risk for unfavorable overall performance in school (Fu *et al.*, 2007). Zaini *et al.* (2005) stated that better nutrition can improve schoolchildren's nutritional status. Sigfusdottir *et al.* (2007), Stevenson (2006) and Kim *et al.* (2005) and found that increased BMI, poor diet, lack of physical activity and sociodemographic is associated with poor school performance.

The nutritional status of children can influence their school performance (Kim *et al.*, 2005). In present study there is a significant association between low fat eating and academic achievement (p = 0.008). It was also found that student with low fat eating are less likely to have lower academic achievement. This is might be due to low intake of high fat food due to health conscious eating behavior. Feinstein *et al.* (2008) found that health conscious eating behavior will lead to better in academic achievement and high junk food consumption will impact the academic achievement in school.

In this study, it was found that low fat eating behavior is significant to student's academic achievement. Research indicates high fat eating behavior might cause in weight gain thus cause obesity (San Juan, 2006) and then cause mental deteriorates and deficiency of micronutrients dense food will cause brain deteriorates (Fu *et al.*, 2007). In addition, the student which has low fat eating behavior is less likely to take high fat food. It was proven that poor nutrition including high fat intake has been associated with various diseases including cardiovascular disease, cancer and hypertension (Middleman *et al.*, 1998) and children with poor health have lower educational achievement (Eide *et al.*, 2010).

Snacking was defined as the consumption of any food item that is not a meal (Khairil and Masuri, 2011). This study showed that snacking eating behavior was not associated with academic achievement. This outcome might be due to the other factor such family influence. As family factor characteristic also have an important influence on academic achievement includes mother's spend time with their children, parents educational level and family income (Fu *et al.*, 2007).

Fu *et al.* (2007) stated that unfavorable academic achievement was positively associated with unhealthful eating pattern. There is a need to further investigate the snacking and convenience eating behavior among schoolchildren and the impact on their academic achievement.

There is no significant association between emotional eating behavior with level of academic achievement (p = 0.243). This is might due to emotional eating is not linked to eating behaviour as emotional eating is defined as excessive eating in response to arousal states such as anger, fear, or anxiety (Hoare and Cosgrove, 1998). However,, this argument should be further investigated.

There is no significant association between meal skipping and academic achievement (p = 0.412). The finding of this study is contradict to previous study in which there is a significant association of meal skipping and academic achievement which stated that meal skipping can lead to food insufficiency and malnourished children can cause deteriorates in mental performance thus affecting children's ability to learn (Taras, 2005; Bellisle, 2004). This may be due to confounder factors includes family factors that influence on both children's eating behavior and academic achievement.

Ming *et al.* (2006) have done a study among primary 5, secondary 2 and secondary 4 in Kuala Lumpur and reported that meal skipping especially breakfast skipping is related to age, sex, BMI and taking nutritional supplements. The impact of self esteem in relation to school achievement has been carefully studied by previous researcher (Baumeister *et al.*, 2003). However, there was no relationship between self esteem and academic achievement was found in present study. This is might be due to the other factor important factors which are not studied: Physical activity (Sigfusdottir *et al.*, 2007) parental factor and socioeconomic factors (Tremblay *et al.*, 2000).

Additionally, present study showed similarities with previous research by Naderi *et al.* (2009) that found there is differences in level of self esteem relationships by gender of the respondent. In the other hand, Tremblay *et al.* (2000) and Naderi *et al.* (2009) in their study found that female had lower self esteem than males.

The result showed that there was a significant difference of snacking and convenience eating behavior between male and female students. This study showed male was tend to having snacking and convenience eating behavior as compared to female students. The male students tend have snacking eating behavior might be due to they are tend to spend their time more with outside activities and this might cause they to have high risk to have snacking behavior.

According to Savige *et al.* (2007), the person that frequently having snacking behavior on the run which is on the way or form school all the day is more likely to skip meals. Snacking eating behavior was associated with excessive energy intake and limiting it will help in reducing excessive energy intake (Savige *et al.*, 2007). However, snacking by promotion nutritious snacks such as fruits, nuts, milk and juices to those have having meal skipping behavior is important.

The result of analysis showed that there was a significant differences in meal skipping between male and female students. The result of study showed that female student was tend to skip meal as compared to male students. The present study is similar with study done by Ming *et al.* (2006) in which she found that girls are higher risk to skip meal. In addition, meal skipping was related to gender with female is more likely skip meal as compared to male especially breakfast and lunch (Savige *et al.*, 2007).

The female student tend to skip meal might be due to they are afraid to be fat. This was supported by Ming *et al.* (2006) that stated female are tend to skip meal due to body dissatisfaction and perceived to be fat tend to skip meal in order to lose weight. Lieberman *et al.* (2001) stated that meal skipping also might be associated with dieting behavior among female as they are more

influenced. In addition, Mellor *et al.* (2010) concluded that women feel more dissatisfied with their bodies than men as they are more concern about their appearance.

CONCLUSION

This finding found that only low fat eating behavior was significant associated factors to academic achievement. It was found that students with low fat eating behavior were less likely to have lower academic achievement. The nature of cross sectional study also limits our ability to discuss directionally and causality. Small sample size of the study limits the statistical power. Thus, future research in a large scale should be done in order to further our understanding of this relationship in detail and data need to be analyses by using multiple logistic regression.

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