THE ASSOCIATION BETWEEN SOCIAL MEDIA (INSTAGRAM) AND EATING BEHAVIOUR AMONG INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA KUANTAN STUDENTS

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ABSTRACT

Introduction: University students are susceptible to disordered eating behavior, and social media plays a major role in contributing to the condition. Instagram has become increasingly popular among the youths and is also widely used for sharing pictures of food. More than 10% of pictures on the platform is food-related. Priming theory describes the effect on the way people react to subsequent stimuli by an external stimulus thus, people who view the food pictures are most likely to consume it. In this research, the concern is addressed by assessing the association between Instagram and external, restrained and emotional eating behaviour. **Methods:** A cross-sectional quantitative research study was performed on undergraduate students of IIUM Kuantan (n=98; 36.7% male; 63.3% female). Sociodemographic and anthropometric measurements of the students were obtained. Self-reported frequency of food-based accounts followed by respondents on Instagram was obtained and external, restrained and emotional eating were assessed by using Dutch Eating Behaviour Questionnaire (DEBQ). **Results:** There was no significant association between the frequency of food-based accounts followed by students on Instagram with anthropometric measurements, sociodemographic and eating behaviour ($p > 0.05$) among IIUMK students. The findings suggested that IIUMK students exhibited restrained and external eating with mean score of 25.0 (SD = 10.2) and 29.2 (SD = 5.7) respectively. On the other hand, they did not exhibit emotional eating with mean score of 29.5 (SD = 8.4) as it did not exceed the 50% cut-off point of Dutch Eating Behaviour Questionnaire (DEBQ) score. **Conclusion:** This study has provided insights on eating behaviour of IIUMK students, revealing that the students with disordered eating behaviour are affected by other factors besides visual attention on social media.

KEYWORDS: Eating behavior, Diet, Disordered eating, External eating, Restrained eating, Emotional eating, Instagram, Social media

INTRODUCTION

Disordered eating behaviour is common among the adolescents especially in older teens and young women. It was found in one study that by the age of 18 years old, 80% of the girls want to weigh less (Jones et al., 2001). This attitude is considered beneficial for health, however, if they resort to maladaptive weight control behaviour, it can inflict health-compromising risks and eating disorders as it was reported that those that suffer from this behaviour have lower quality of life (Jones et al., 2001). Disordered eating behaviour comprised of restrained, emotional and external eating in which restrained eating is associated with cognitive self-control (Hirsch et. al, 2014). Restrained eaters restrict their food intake to avoid weight gain or encourage weight loss (Tuschl, 1990) whereas emotional eating is known as reducing negative emotions by overeating (Macht & Simons, 2011). On the other hand, external eating is known for individuals that tend to continue to eat at the presence of external cues, despite not being hungry (Van Strien, 1986).

These three eating styles are influenced by individual factors, social environment and physical environment; however, it is also greatly influenced by environmental cues such as mass media and social media. Social media especially Instagram has become increasingly favoured across the globe and widely used by people regardless of age and gender, with 71% of its users are dominated by adolescents from the age of 18 to 24 years (Huang, 2018). Instagram is known as a photo-based platform whereby people mainly use it to document their memories and interact with people. Nonetheless, photos of food are particularly widespread and more than 10% of food-related accounts are followed by the users (Huang, 2018). Researchers observed that there is substantial amount of food content on Instagram as the platform has features that enable photos to be shared extensively.

The use of Instagram among youths has instilled great concerns as it was reported that the social media may inflict negative effects on their food consumption due to prevalent of food photos on the platform. According to Priming Theory, food content on social media can affect the users unintentionally. Priming refers to the effect on the way people react to subsequent stimuli by an external stimulus (Harris, Bargh, & Brownell, 2009). When this occurs, people who has viewed food advertisement or photos may be stimulated to consume the advertised food, regardless healthy or not. Thus, it is believed that exposure to food content on this social media platform is indirectly linked to disordered eating behaviour. In consideration of that, this current study suggests that there is detrimental impact of food content in social media on individuals' eating behaviour. Therefore, the main objective of this study is to determine the association between social media (Instagram) and external, emotional and restrained eating behaviour as there have been studies that showed link between eating behaviour and mass media such as television (Santarossa, 2015).

METHODS

Subjects

Male and female IIUM undergraduates aged between 18 to 25 years old and owned Instagram accounts were recruited to participate. This study's ethical approval had been

acquired from International Islamic University Malaysia Research Ethical Committee (KAHS 03/20). Consent from the subjects was obtained before data collection.

Sociodemographic information and anthropometric measurements

Upon recruitment, the subjects were required to complete demographic information comprised of age, gender, kulliyyah and year of study. Anthropometric information included height, weight and body fat percentage (BFP) of the subjects were measured using a portable stadiometer, electronic weighing scale and OMRON body fat analyzer, respectively. Based on the measurements, the subjects' BMI (kg/m^2) was recorded using WHO cut-off values, whereas body fat percentage values were based on the manufacturer's standard. The frequency of food-based accounts followed by the subjects on Instagram was recorded.

Dutch Eating Behaviour Questionnaire (DEBQ)

A Malay version of the self-administered Dutch Eating Behavior Questionnaire (DEBQ) was distributed to be completed by the subjects. DEBQ contained 33 items and was used to measure emotional (13 items), external (10 items) and restrained eating behavior (10 items). The questions were answered using Likert scale that begins with 1 = never, followed by 2 = seldom, 3 = sometimes, 4 = often and 5 = very often. Subjects whose score exceeded the cut-off point of 50% were susceptible to the three eating behavior styles.

Table 1 Categorization of DEBQ scores.

Eating Behavior	Number of Questions	50% Cut-off Point
External Eating	10	> 25.0
Emotional Eating	13	> 32.5
Restrained Eating	10	> 25.0

Statistical Analysis

SPSS Statistical programme version 25.0 was used to conduct the statistical analysis. Descriptive statistical analysis such as mean, frequency, percentage, median, interquartile range and standard deviation were used to describe the sociodemographic data. Next, Spearman's Rho Correlation and Independent Samples Median Test were conducted to identify the association between food-based accounts followed by students on Instagram with anthropometric measurement and demographic factors. Spearman's Rho Correlation was also used to assess the association between food- based accounts followed by students on Instagram and external, emotional and restrained eating score in DEBQ. Statistical probability level of $p < 0.05$ was determined as significant.

RESULTS

Sociodemographic data of respondents

A total of 98 respondents were recruited, including 36 male and 62 females. Since the research involved only IIUMK undergraduate students, all of them were in between 19 to 25 years old (mean age = 22.1 years; SD = 1.3) with mean BMI of 22.6 kg/ m^2 (SD = 3.6), which indicated that IIUMK students have normal BMI overall. In addition, the mean BFP of male were 16.6% (SD = 6.2) whereas female was 25.4% (SD = 5.0). Likewise, both genders have healthy BFP as the mean BFP is within the normal range.

IIUMK consisted of 6 kuliyyahs whereby, majority of the respondents were from Kuliyyah of Allied Health Sciences which is 77 (78.6%), followed by Kuliyyah of Science which is 10 (10.2%), Kuliyyah of Pharmacy which is 6 (6.1%), Kuliyyah of Nursing which is 3 (3.1%), and 1(1%) each from Kuliyyah of Medicine and Dentistry. Moreover, it was found that most of the respondents were in year 3 which is 53 (54.1%), followed by year 1 (21.4%) which is 21, year 4 (13.3%) which is 13 and year 2 (11.2%) which is 11.

Frequency of food-based accounts followed

The frequency of food-based accounts followed on Instagram was described in Table 2. The median number of food accounts followed by IIUMK students on Instagram is 3, ranging from 1 to 112 whereas the median percentage of food-based accounts followed by IIUMK students on Instagram is 0.64%, ranging from 0.1% to 30%. Median was used to describe the data on frequency of food follow as it was not normally distributed. Thus, initial hypothesis was rejected as there was less than 10% accounts followed by students on Instagram, which was only 0.64%.

Table 2. The frequency of food-based accounts followed on Instagram.

Variables	inimum	aximum	edian	nter quartile Range
Number of food-based accounts followed on Instagram		12	.00	
Percentage of food-based accounts followed on Instagram	.1	0	.64	.8

Eating behavior of respondents

The mean score of Dutch Eating Behaviour Questionnaire (DEBQ) obtained by respondents for emotional eating was 29.47 (SD = 8.35) with 58 (59.2%) students displayed emotional eating behaviour whereas 40 (40.8%) of them did not. On the other hand, the mean DEBQ score obtained by students for external eating is 29.2 (SD = 5.7) with 28 (28.6%) of them displayed external eating behaviour while 70 (71.4%) of them did not. Lastly, the students obtained restrained eating score of 25.0 (SD = 10.2) in which 50 (51.0%) had this disordered eating behaviour whereas 48 (49.0%) did not.

The results in Table 3 and Figure 1 revealed that IIUMK students did not exhibit emotional eating behaviour but they exhibited external and restrained eating behaviour as the mean score for both eating styles exceeded the 50% cut-off point. Therefore, majority of the students manifested restrained eating behaviour followed by external eating behaviour. The mean score of the Dutch Eating Behaviour Questionnaire (DEBQ) obtained by respondents for emotional eating was 29.47 (SD = 8.35), with 58 (59.2%) students displayed emotional eating behavior whereas 40 (40.8%) of them did not.

On the other hand, the mean DEBQ score obtained by students for external eating is 29.2 (SD = 5.7), with 28 (28.6%) of them displayed external eating behavior while 70 (71.4%) of them did not. Lastly, the students obtained a restrained eating score of 25.0 (SD = 10.2), in which 50 (51.0%) had this disordered eating behavior, whereas 48 (49.0%) did not. The results in Table 3 and Figure 1 revealed that IIUMK students did not exhibit emotional eating behavior, but they exhibited external and restrained eating behavior as the mean score for both eating styles exceeded the 50% cut-off point. Therefore, the majority of the students manifested restrained eating behavior, followed by external eating behavior.

Table 3. Mean score of Dutch Eating Behavior Questionnaire (DEBQ) among respondents.

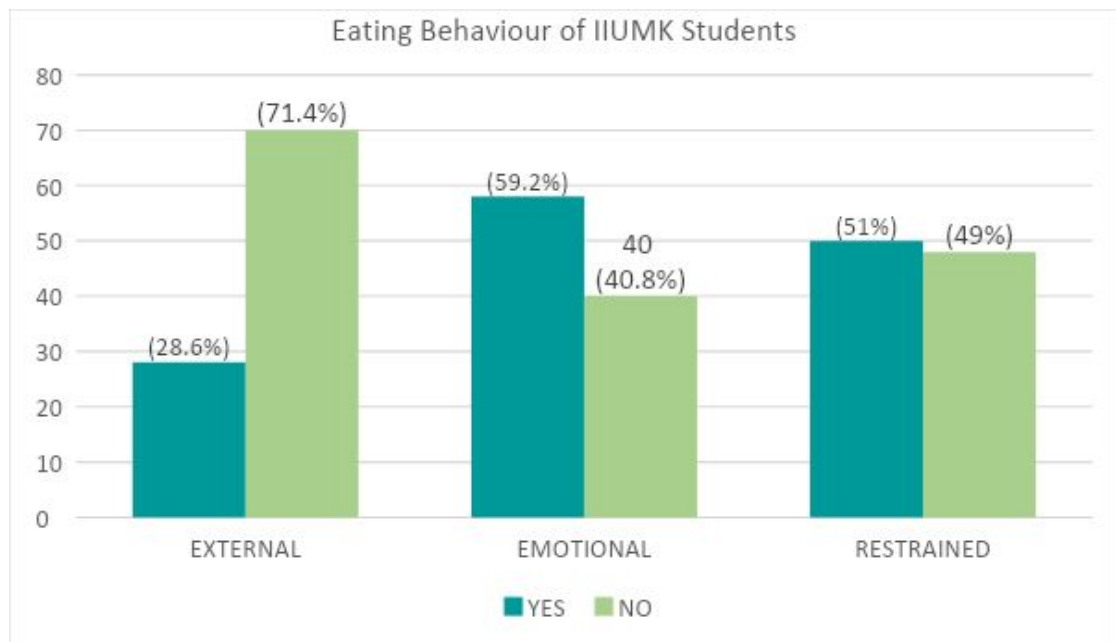| Eating behavior traits		Mean ± SD	Total Number, n (%)	
			Yes	No
	Emotional	29.5 ± 8.4	58 (59.2%)	40 (40.8%)
	External	29.2 ± 5.7	28 (28.6%)	70 (71.4%)
	Restraint	25.0 ± 10.2	50 (51.0%)	48 (49.0%)

Figure 1. Categories of Eating Behavior Exhibited by Students

Association Between Frequency of Food-Based Accounts Followed on Instagram With Anthropometry Measurements and Demographic

The results in Table 4 revealed that the association between number and percentage of food-based accounts with age was r = -0.120 (p = 0.238) and r = 0.033 (p = 0.748) respectively, whereas BMI was r = 0.171 (p = 0.091) and r = 0.049 (p = 0.631) respectively. Likewise, that the association between number and percentage of food-based accounts with BFP was r = 0.040 (p = 0.697) and r = 0.053 (p = 0.602). Based on the analysis, number and percentage of food-based accounts followed on Instagram have no significant correlation with BMI, age and BFP of IIUM students.

Table 4. Spearman Correlation between food accounts followed on Instagram with BMI, age and body fat percentage of respondents.

ariables	Number of food accounts followed on Instagram		Percentage of food accounts followed on Instagram	
	orrelatio n, r	-value	*orrelati on, r*	*p*-val ue
MI (kg/ m^2)	.171	.091	.049	0.631
ge (years)	0.120	.238	.033	0.748
ody fat percent age	.040	.697	.053	0.602

*Spearman's Rho Correlation, *p*<0.05 two tailed

Based on the result in Table 5, there was no significant correlation between number and percentage food-based accounts followed on Instagram with gender as p = 0.976 (>0.05) and p = 0.834 (p > 0.05) respectively. Next, the result also showed the number and percentage of food-based accounts followed on Instagram with kuliyyah was not significantly correlated as p = 0.542 (>0.05) and p = 0.589 (>0.05) respectively. Similarly, the findings suggested that the association between food-based accounts followed on Instagram is p = 0.241 (>0.05) and p = 0.087 (>0.05), respectively.

Table 5. Independent samples median test (p-values) between food-based accounts followed on Instagram with gender, kuliyyah and year of study.

Variables	Median number	-val ue	Median percent	*p*-value
Gender				

Male	16	.976	18	0 .834
Female	26		31	
Kulliyyah				
KAHS	31 6		3 7	
KOS	3 2	.542	7 3	0 .589
KOP	0 0		2 0	
KON			0 0	
KOM				
KOD				
Year of study				
1	10		95	
2	3 2	.241	3 2	0 .087
3	6		3	
4	3			

Association Between Frequency Of Food-Based Accounts Followed On Instagram With Eating Behaviour

The results revealed there was no significant association between number and percentage of food-based accounts with external factors (EX-DEBQ), where $r = -0.01$ ($p = 0.921$) and $r = -0.058$ ($p = 0.568$) respectively. Similarly, results also showed the association between number and percentage of food-based accounts with emotional factors (EM-DEBQ) was $r = 0.03$ ($p = 0.974$) and $r = -0.039$ ($p = 0.700$) respectively, thus suggesting no significant correlation. Finally, number and percentage of food-based accounts was also not significantly correlated to restrained factors (R-DEBQ) where $r = 0.092$ ($p = 0.368$) and $r = 0.013$ ($p = 0.896$) respectively.

Therefore, the initial hypothesis was rejected as there was no association between the frequency of food-based accounts followed on Instagram with external, emotional and restrained eating scores of DEBQ.

Table 6. Spearman Correlation between food accounts followed on Instagram with DEBQ scores.

Variables	Number of food accounts followed on Instagram	Percentage of food accounts followed on Instagram

	orrelation, r	-value	orrelation, r	p-value
X-DEBQ	0.01	.921	0.058	0.568
M-DEBQ	.03	.974	0.039	0.700
-DEBQ	.092	.368	.013	0.896

*Spearman's Rho Correlation, *$p<0.05$ two tailed

DISCUSSION

A study conducted by Jimoh & Musa (2017) revealed that both genders posted the least food photos on Instagram as they emphasized more on interacting with friends by tagging or posting pictures with them instead of food photos. The study also indicated that females commonly used Instagram to post selfies and are more interested in fashion posts, whereas males are more attentive to sports-related posts. It is also in line with a study by Sheldon and Bryant (2016), where women are more likely to include photos that portray their friends and family while men are more inclined to sports-related photos.

Instagram is used by influencers to create youth fashion trends among the age groups of 19 to 22 years old (Triani & Vusparatih, 2019). Some influential figures are fashion advocates; hence many young people follow them to date on the latest fashion trend and refer them for outfits inspiration. Thus, this explains the insignificant association between food-based accounts followed by university students with age and year of study.

There is no significant association between the frequency of food accounts followed by university students on Instagram with kuliyyah due to respondents' different academic significant backgrounds. The research found that using Instagram is influenced by thinking styles, including the individual's ability to operate search tasks and webpage experiences (Kao, Lei & Sun, 2008). Thinking styles and patterns are correlated to academic expertise and majors; thus, students who major in education, art, literature and communication utilize their right brain, whereas those that major in management, engineering and science utilize their left brain (Saleh, 2001).

Advergames that promoted energy-dense food did not predict BMI of normal weight children as they may have reduced their regular food intake after consuming the energy-dense food as an act of compensation (Folkvord, Anschütz & Buijzen, 2016). Similarly, the university students may compensate for their large intake of high caloric snacks after food advertisements by restricting the amount of food they eat in the next meals, thus maintaining their current BMI. As body fat percentage (BFP) is closely correlated to BMI, it explains why there is no significant association in food-based accounts followed on Instagram with BFP.

Visuals of food on Instagram do not influence restrained eating behavior among the students as other factors influence them. Viewing visual of food is independent of restrained eating as this unhealthy eating behavior is reinforced by body dissatisfaction that is in line with many studies (Forrester-Knauss, Perren & Alsaker, 2012). The portrayal of unrealistic body idealization, referred to as 'thin ideal' by the media, is one of the most potent implications of women's body images. The expectation imposed by the media on women affect the way they perceive and value themselves, whereby causing them to take measures to the extent that they develop abnormal eating behavior like restrained eating.

The present study showed an insignificant association between food-based accounts and external eating is most likely due to the lack of ambiance and aesthetically-pleasing surroundings in the food pictures. Due to this lack of pleasing visuals, external eaters are less likely to be aroused. The visual of appetizing food is impactful towards external eaters due to the presence of other environmental cues. Food and plating play a vital role in attracting people's attention and interest (Paakki et al., 2019). Other environmental factors that affect how external eaters perceive the food is the assortment of food as well as serving size, which is perceived as large or wide gives consumption illusion (Kahn & Wansink, 2004)

Emotional eaters regulate their emotions using two coping mechanisms: an escape/avoidance coping style mechanism and a rumination/affect regulation focused mechanism (Denke, 2018). Individuals with coping avoidance mechanisms are more likely to be affected by the social platform's food images. They may use Instagram to distract themselves from negative emotions, and while using the platform, they are exposed to food pictures. It is consistent with the research conducted by Denke (2018), in which emotional ruminant eaters showed no significant response than avoidant emotional eaters when exposed to food pictures. Therefore, emotional eating scores in DEBQ show no significant association with food-based accounts followed on Instagram as the students may consist of more ruminant coping styles than avoidance coping styles emotional eaters.

CONCLUSION

Building on the previous knowledge of how social media use affects eating behavior, the relationship between university students and eating behavior in the social environment is assessed. Based on the current findings, it can be concluded that the frequency of food-based accounts followed on Instagram by university students was not associated with disordered eating behavior, granted that less than 10% of the Instagram accounts followed by them are food-based. The results indicated that within the study population, the visuals of food photos on the accounts they followed did not influence external, emotional and restrained eating and anthropometric measurements and demographics.

ACKNOWLEDMENT

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