THE ASSOCIATION BETWEEN SOCIAL MEDIA (INSTAGRAM) USE AND SUGAR CRAVING AMONG IIUM KUANTAN STUDENTS

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ABSTRACT

Introduction: This study aims to identify the influence of food exposure from social media (Instagram) on sugar craving status among the International Islamic University Malaysia Kuantan Campus (IIUMK) students. **Methods:** A total of 99 participants from the IIUMK campus who fulfilled the inclusion criteria were recruited in this quantitative cross-sectional study. Participants were required to fill in questionnaires that consist of Part A (demographic data, anthropometry measurement and several following food-related accounts on Instagram) and part B (MySCAT). **Results:** The most craved food was ice-cream and popsicles with a mean score of 2.37. Meanwhile for the frequency of following food-related account on Instagram with age and BMI, it showed no significant correlation as the mean score were $r = 0.03$ ($p = 0.79$) $r = 0.02$ ($p = 0.86$) respectively. The association between the frequency of following food-related accounts on Instagram and gender also showed no correlation as the p-value is also more than the significant value ($p > 0.05$). Lastly, the association between the frequency of following food-related accounts on Instagram and the sugar craving score is not significant ($r = -0.04$, $p = 0.68$). **Conclusion:** This study did not support the hypothesis that there is an association between the frequency of food-related account followed on Instagram and sugar craving status among IIUMK students.

KEYWORDS: *Sugar craving, Food craving, Social Media, Instagram, Nutrition transition*

INTRODUCTION

Sugar once labelled as “pure, white and deadly” by Yudkin (1978). People enjoy the taste of sugar and the term "sweet" is used not only to describe the basic quality of taste but also something desirable or pleasurable. Glucose levels and its efficiency in utilizing it are

closely related to the brain functions like learning, memory and thinking. Nevertheless, the excessive intake of it can lead to various health complications including obesity and type-2-diabetes mellitus. According to World Health Organization (2015), in order to reduce the risk of obesity and weight gain, it is recommended that added sugar intake should be reduced to less than 5% of daily calorie intake. According to Lee and Muda (2019), their research figured out that the participants' mean total sugar intake was 28.4 ± 23.3 g per day which is exceed the daily recommended sugar intake. There are many internal and external factors that might contribute to the increase in daily sugar consumption and it craving. One of it might be due external cue such as watching picture-appetizing food such as chocolates and cakes. In the past years, many researches has been done to discover the association between food advertising and it consumption. According to Qutteina et al., (2019), media promotion of food, such as food advertising and sponsorships on television (TV) and newspapers, affects eating habits and choices particularly among minors. Their reviews figured out that media food promotion raises the intake of fried foods, desserts and other foods high in calories and poor-quality nutrients. Nowadays, use of social media has increased significantly among people of all age groups, especially among adolescents (eMarketer, 2016). Thus, , marketers decided to switch their focus and investments from television and other traditional media to social media (Hawkes, 2014). These days, adolescents are more exposed to electronic gadgets such as smartphones, and thus more vulnerable to overuse or addiction in social media. Instagram, which was launched in 2010, is an online social networking site reportedly used by 53 percent of young American adults whom aged from 18 to 29 with internet access (Turner & Lefevre, 2017). Each day, under the hashtag #foodporn, over 62 000 photos are shared globally (Mejova, Abbar, & Haddadi, 2016). Such photos glamorize the highly palatable, high-calorie foods that are believed to encourage the disordered eating patterns that lead to today's epidemic of obesity. The public posting of food "pornography" specifically contextualizes the comfort foods of social media users worldwide. Given the possibly negative connotations it brings, the case of #foodporn is particularly interesting to encourage an unhealthy diet, as similar to where pornography may lead to an inaccurate view of sexuality (Rousseau, 2013). In fact, Mejova et, al., (2015) emphasized in their findings that in UK, donut and cupcakes shop received the most likes on Instagram. Due to that, the interaction in their brain may react towards external food cue as they spending time watching foods on Instagram. As a result, the desire towards having chocolates or sweets may increase without they realize it.

METHODS

In total, 99 volunteers from International Islamic University Malaysia (IIUM) Kuantan campus who fulfilled the inclusion criteria were recruited for this quantitative cross-sectional study. Informed consent was obtained from each participant. The protocol of the study was approved IIUM Research Ethics Committee (IREC). All data were collected by forced choices and fill in the blanks based on the questionnaire. The age, body weight and height were measured and recorded on the day of data collection to gain information on body mass index (BMI) and relate it with the usage of social media and sugar craving. Data collected include were gender, kulliyyah and year of study of the participants. The total number of accounts followed on Instagram, and the number of food-related accounts

followed on Instagram were recorded to give the frequency and percentage of food-related accounts followed on Instagram. MySCAT questionnaire consists of 30 items and the main purpose is to assess sugar craving status among Malaysian (Fathin, 2017). It is an interval/ratio scale questionnaire. It is a self-report used to assess individual food cravings for different types of foods containing added sugar. It was developed based on foods and beverages listed in Food Composition Table of Malaysian Foods, Food Atlas and its pilot study. Some of them are traditional *kuih*, sweetened beverages and pastries (Fathin, 2017). The data of this study was analyzed by using the Statistical Package for Social Sciences (SPSS) software version 25.0. The results were presented as percentages or as descriptive statistic and correlation test. The mean for the associations between the frequency of followings food-related account on Instagram with anthropometry measurement and sugar craving score were analyzed using Spearman Rho's Correlation while it association with gender were analyzed using Mann Whitney U-Test. The difference was regarded as significant of 95% confidence interval.

RESULTS

A total of 99 respondents, 36 of them were males, and 63 were females. While the rest of the demographic data, anthropometry measurement and frequency of food-related account followed on Instagram is shown in the Table 1.

Table 1 Socio demographic backgrounds of respondents (N = 99)

Characteristic	Total number, N (%)		Mean ± SD
Kulliyah			
KAHS	78	(78.8%)	
KOS	10	(10.1%)	
KOP	6	(6.1%)	
KOM	1	(1.0%)	1.44 ± 1.08
KOD	1	(1.0%)	
KON	3	(3.0%)	
Year of Study			
1	22	(22.2%)	2.58 ± 0.98
2	11	(11.1%)	
3	53	(53.5%)	
4	13	(13.1%)	

Age			Continue....
19	1	(1.0%)	22.11 ± 1.2
20	18	(18.2%)	
21	9	(9.1%)	
22	20	(20.2%)	
23	43	(43.4%)	
24	8	(8.1%)	
BMI			
< 18.5 (Underweight)	9	(9.1%)	22.57 ± 3.60
18.5 – 24.5 (Normal)	66	(66.7%)	
25.0 – 29.9 (Overweight)	20	(20.2%)	
>29.9 (Obese)	4	(4.0%)	
Frequency of food related account followed on Instagram			**Median ± IQR**
< 10	87	(87.9%)	1.00 ± 0.00
11 - 20	9	(9.1%)	
21 - 30	2	(2.0%)	
> 30	1	(1.0%)	

Pattern of Sugar Craving

Based on the MySCAT questionnaire, the higher the score, the higher the sugar craving level. Among the 99 respondents, the average score was 45.21. The minimum score was 17 while the highest score was 81. Meanwhile, Figure I portrayed the craving score for each type of food. It can be seen that the most craved foods were ice cream/popsicle, drinks such as tea, iced tea and malt drink while chocolate and cakes share the same mean. Apart from that, the least craved foods were *dodol/wajik/lempuk*, canned fruit and fruit jam.

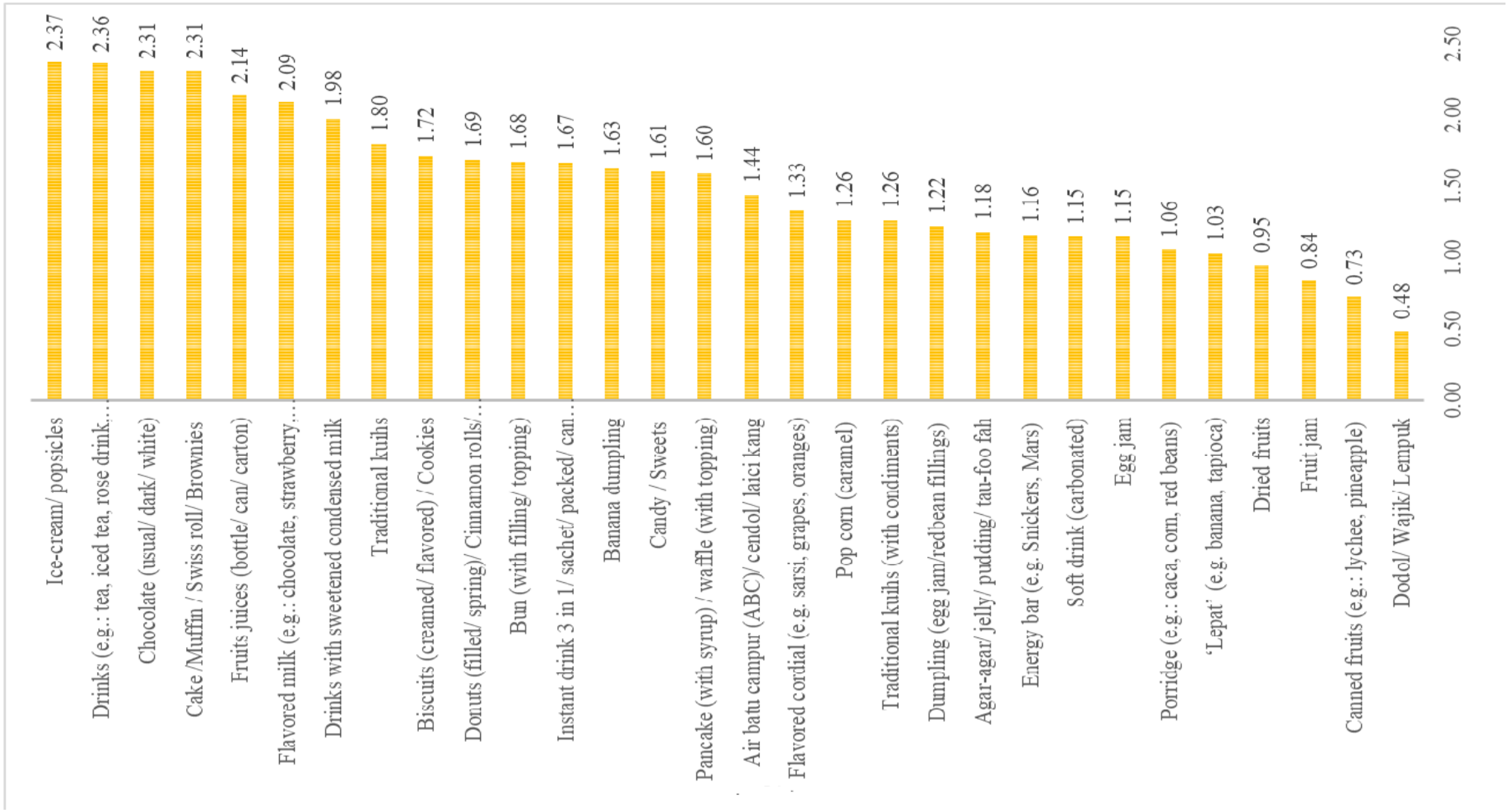

Figure I Bar chart for mean craving score for each food

The correlation test using Spearman's Rho Correlation between age and BMI. Frequency of following food-related account on Instagram has no significant correlation with age (r = 0.03, p = 0.79) and BMI (r = 0.02, p = 0.86) as both p-value were more than 0.05. The Mann-Whitney U Test for the association between frequency of followings food-related account on Instagram and gender. Result shows that there was no difference in the frequency of following food-related account on Instagram between male and female participants (p =0.70). Spearman's Rho Correlation test has been conducted to figure out the association between the frequency of followings food-related account on Instagram and sugar craving score. Based on the correlation analsysis, the association between the frequency of followings food-related account on Instagram and sugar craving score is not significant (r = -0.04, p = 0.68).

DISCUSSION

Pattern of Sugar Craving

To assess the sugar craving status among IIUMK students, volunteered participants had answered the Malaysian Sugar Craving Assessment Test (MySCAT). From the result, the mean score for the sugar craving score is 45.21±14.40. The MySCAT score ranged from 0 to 120 that determine the craving class which are 0 to 44 considered as not craving while 45 to 120 will be considered as craving (Wan Fathin et. al, 2015). Thus, the mean score of sugar craving falls on craving class. Apart from that, the minimum and maximum score shows great difference. From this research, it could be seen that the most craved food were ice-cream and popsicles with mean score of 2.37 while the least crave were *dodol/wajik/lempung*.

According to a study done to discover how does food addiction influence dietary intake profile recorded that males with food addiction reported having substantially more problems with food like chocolate, doughnuts, cookies, cake, sweets, white bread, pasta , rice, crackers, pretzels, French fries and hamburgers compared to males without food addiction. Meanwhile, significantly more issues are recorded for females with food addiction with food chocolate, doughnuts, cookies, cake, candy, white bread, rolls, pasta , rice, crackers, chips, French fries, hamburgers and pizza compared to females without food addiction (Ayaz et al., 2018). These researches were contradict to this study as ice-cream and popsicles are not on top of their most craved food list and it might be due to other factors such as culture and geographical differences.

Correlation of the percentage of food-related account followed on Instagram and anthropometry measurement and demographic data

As for BMI, the result showed that there were no significant association with the frequency of food-related followed account Instagram. According to Powell, Wada, Khan and Emery (2017), their research figured out similar finding where exposure to fast-food or sugar-sweetened beverages (SSB) advertisement on television have no association with BMI.

For the association between the frequency of followings food-related account on Instagram with age, the result also showed no significant association between these two variables. Based on a latest study conducted by Rummo et al., (2020) to examine the relationship between youth-targeted food marketing expenditures and the demographics of social media followers, their findings showed that there was no association between users who followed popular food and beverages brand on Instagram with age group from 18 to 20, 21 to 24 and 25 to 29 years old Thus, percentage of food-related account followed on Instagram.

The result of this study also portrayed that the association between frequency of followings food-related account on Instagram and gender was not significant. Research that is associating the number of following food-related account on Instagram and gender is scarce. However, there are several studies figuring out the usage of social media such as Instagram between gender, yet it shows inconsistent results between each study. It could be say that anthropometry measurement and demographic data were not associated with percentage of food-related account followed on Instagram.

Correlation of the percentage of food-related account followed on Instagram and sugar craving score

It was expected earlier that the frequency of followings food-related account on Instagram is positively associated with sugar craving score where the higher the frequency of following food-related account on Instagram, the higher the sugar craving score.

On the other hand, the finding of this study demonstrated inconsistent correlation between those two variables. There result does not show any significant association between frequency of followings food-related account on Instagram is and sugar craving score among IIUMK students. The result showed that the median score for percentage of following food related account on Instagram is 0.69 which is very low. Thus, it does not fit with the theory that external food-cues may induce extreme desires towards sugar. This might be due to the limited variables collected while doing this study .

Additionally, there are very limited study showing relationship between exposure of food from Instagram or any other social media platforms with sugar craving. Most studies discover the effect of food viewing on any platforms or in advertisement with food behavior. Despite that, there are still several researches that had come out with results agreeing that exposure to food-related advertisement and seeing food pictures (visual cues) can lead to craving and excessive food consumption (Boswell & Kober, 2016).

A research had come out with result proving that for the short 30 minutes exposure to chocolate has led to increase in cravings in the exposure group. As for the long 60 minutes exposure, the result also show that it lead to craving among the exposure group (Frankort et al., 2014). In accordance with Passamonti's (2009) study to predicts brain’s response to viewing appetizing food, it agreed that desire to eat might escalated with sight of appetizing food even with absence of hunger.

Thus, none of any study found that disagree on the relation between visual food cues and desirability towards food. Level of hunger and food consumption also found to be increased with food visual stimulation in any form

CONCLUSIONS

This study did not support the hypothesis that there is association between the frequency of food-related account followed on Instagram and sugar craving status among IIUMK students. However, this study found that craving for sugar existed among students and found out that ice-cream and popsicles were the most craved sweets among all. As this is one among the first studies that try to highlight the association between food exposures on Instagram with sugar craving, few amendments can be taken to further discover more on their relationship.

This study can act as a milestone for other research in the futures. We are living in the era where digitalization is currently growing rapidly, and worldwide obesity pandemic is kept on increasing as well.

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