

Emotional Eating, Stress, Food Purchasing and Consumption among Malaysian Undergraduate Students in Klang Valley during the COVID-19 Pandemic

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ABSTRACT

Introduction: The COVID-19 pandemic resulted in the implementation of the Movement Control Order (MCO) in Malaysia since March 2020. This had led to major lifestyle disruptions including university students, influencing the way they perceive stress and their psychological well-being, which in turn prompted a shift in their behaviour towards food.

Objective(s): This study aims to evaluate the association between stress, emotional eating and food consumption among undergraduate students in Klang Valley during the COVID-19 pandemic. Methodologies: An online 4-part questionnaire was used to evaluate the association between emotional eating, stress, food purchasing behaviour and preferences among 335 Malaysian undergraduate students studied at universities located in the Klang Valley.

Results: About half (48.4%) of the undergraduate students were classified under the high stress group. Male emotional eaters (30.3%) were higher than their female (23.6%) counterparts. A significant association between stress and emotional eating ($\chi^2=7.494$, $p=0.006$) was found among undergraduate students in Klang Valley during the COVID-19 pandemic.

Conclusion: The MCO had been found to be associated with the shift in behavioural nutrition among the undergraduate students. This study provides a reference point for further studies on undergraduate health and well-being.

Keywords: COVID-19; MCO; food purchasing; food consumption; emotional eating.

INTRODUCTION

The “Movement Control Order” (MCO) imposed by the government comprising a series of actions and procedures that aimed towards decreasing the spread of COVID-19. The MCO along with border closures contributed to the major disruptions towards the food supply system and resulted a change in behavioural nutrition of many individuals (Janssen et al., 2021). Countless psychological alterations due to the pandemic was having a direct effect on food-related behaviours, including the occurrence of panic buying, reduced food shopping that directly affects the fresh food purchase and decreased in fresh food consumption, increased purchase of highly processed foods and consumption of “comfort foods” as a coping mechanism for psychological distress and emotional eating (EE) were also reported (Devit, 2020; Pak et al., 2021).

Major lifestyle disruption observed in university students was the substitution of face-to-face learning with online teaching, and this change may create stress to the students they are still required to learn and grasp the knowledge within the semester and attend examinations as usual via online mode (Yang et al., 2021). The stressful university life influences how students perceive stress and how it affects their emotions, learning process engagement as well as their psychological well-being that influences their behaviour towards food (Hasan et al, 2020; Song et al., 2020; Janssen et al., 2021).

Emotional eating can be defined as the tendency to over consume food when negative emotions such as depression, anxiety and stress are present (Thayer, 2003). Past study had shown the use of stress-related eating to cope with stressful situations (Bracale and Vaccaro, 2002), hence, the risk of developing EE due to the presence of

negative emotions have since increased. Individuals with higher perceived stress during the pandemic, were shown to have higher EE and demonstrated the mediation of EE towards the association between perceived stress and food choice motives (Shen et al., 2020). Studies have shown that the amount and types of food consumed is affected by stress as individuals with high stress scores tend to consume more calories and hyperpalatable, energy-dense foods that consists high amounts in sugar and fat (Groesz et al., 2012; Kim et al., 2013; Al-Musharaf et al., 2020).

Thus, this study aims to determine the food purchasing behaviours, food consumption along with prevalence of stress and emotional eating as well as the association between stress, emotional eating, and food consumption among undergraduate students in Klang Valley during the COVID-19 pandemic.

METHODOLOGIES

2.1 Participants and Study Design

There were 335 Malaysian undergraduate students (18-24 years) from the Klang Valley participated in this cross-sectional study evaluating the association between emotional eating, stress and food purchasing behaviour and preferences in the Klang Valley during the COVID-19 pandemic. An online Google Forms consisted of socio-demographic profile, food purchasing behaviour and consumption, Perceived Stress Scale (PSS) and the Eating Behaviour Questionnaire was used. The Food Purchasing Behaviour and Consumption questionnaire was adopted from Janssen et al. (2021), whilst the PSS measures the degree to which life has been experienced as “unpredictable”, “uncontrollable”, and “overloaded” for the past month using a 5-point Likert scale (Cohen et al., 1983). Participants who scored ≤ 20 were classified as “low stress” whereas participants with scores ≥ 21 were classified as “high stress” (Cheng and Wong, 2021). The Eating Behaviour Questionnaire was adopted from the Emotional Eating Subscale of the Dutch Eating Behaviour Questionnaire (DEBQ) (van Strien et al., 1986). The Emotional Eating (EE) Subscale consists of 13 items assessing the EE behaviours with a 5-point Likert scale. A cut-off score of >3.25 was used to identify negative EE, those with higher mean subscale scores propose more severe emotional eating symptoms (van Strien et al., 2012). The ethical clearance was obtained from UCSI University Institutional Ethics Committee (Project Code: IEC-2022-FAS-011). Participation was voluntary and informed consent was obtained from the participants through clicking on the “Yes, I agree” option on the information section of the Google Forms.

2.2 Data Collection

The data collection was conducted from January to March 2022 where the Google Forms link was distributed through various social media platforms such as Facebook, Instagram, Twitter, WhatsApp and UCSI Cn. Study

participants were required to answer a series of questions (approximately 15-20 minutes to complete) and were made aware that there were no risks or direct benefits and no incentives given by participating in this study.

2.3 Data Analysis

Statistical Package for Social Sciences (SPSS) version 21.0 was used to analyse all the data. Chi-square test was used to determine the association between stress and emotional eating as well as the association between food consumption and stress among Malaysian undergraduate students in the Klang Valley. The level of statistical significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

3.1 Sociodemographic Characteristics of Participants

Table 1 shows that majority of the participants were females (73.4%), majority of the students were living with their family members during the MCO period (77.6%), and slightly more than half (53.5%) and more than one-third (36.1%) of the participants were from B40 and M40 income households, respectively.

Table 1: Sociodemographic characteristics of participants (n=335)

Socioeconomic Information	n (%)
Gender	
Male	89 (26.6)
Female	246 (73.4)
Ethnicity	
Malay	40 (11.9)
Chinese	275 (82.1)
Indian	16 (4.8)
Other	4 (1.2)
Current Living Arrangement	
With family members	260 (77.6)
With friends	40 (11.9)
Alone	35 (10.4)
Institute	
Public	27 (8.1)
Private	308 (91.9)
Monthly household income*	
Less than RM2500 (B40 (B1))	93 (27.8)
RM2501- RM4849 (B40 (B2-B4))	86 (25.7)
RM4850- RM10959 (M40)	121 (36.1)
RM10960 and above (T20)	35 (10.4)

*The household income range for B40, M40 and T20 is based on the Household Income & Basic Amenities Survey Report 2019 (Department of Statistics Malaysia, 2019).

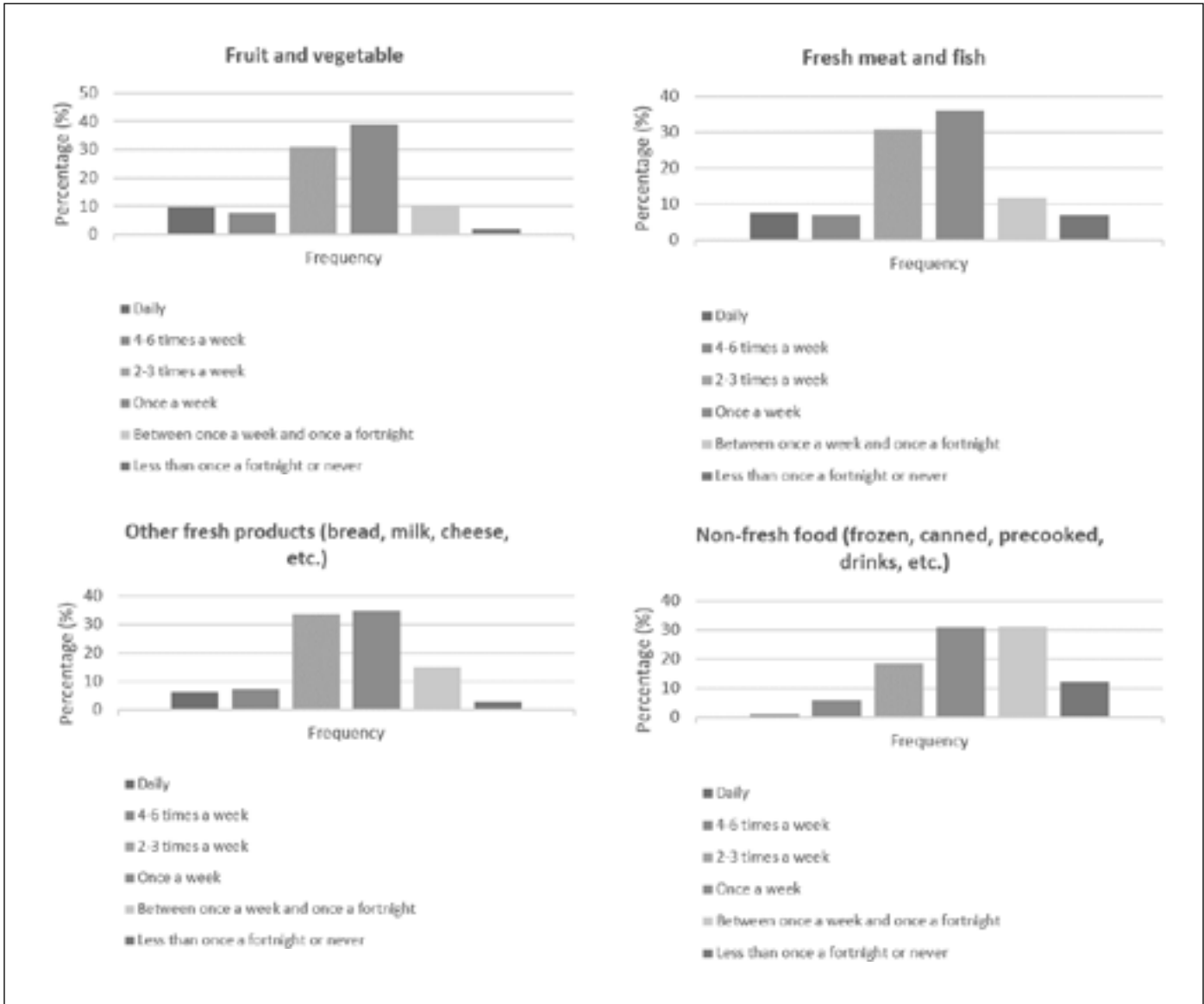


Figure 1: Frequency of food obtained by participants during the pandemic (n=335)

3.2 Food Purchasing and Consumption

During the COVID-19 pandemic, food products, such as fruits and vegetables (39.1%), fresh meat and fish (36.1%) and other fresh food products such as bread, milk, cheese and so forth (34.9%) were purchased once a week, whereas non-fresh foods (31.3%) were purchased between once a week and once a fortnight, as shown in Figure 1. A decrease in shopping frequency and the purchase of fresh food products was observed in this study, similar observation was reported in a Slovenian study where a decrease in shopping frequency of fresh food (42–58%) along with a decrease for non-fresh food (35%) (Janssen et al., 2021). A greater change in food purchasing frequency may be a result of stricter restrictions or MCO implemented in both Malaysia and Slovenia (Teoh 2021; Janssen et al., 2021).

The situation of the pandemic and implementation of MCO has triggered a shift in food-related activities. As shown in Figure 2, majority of study participants

consumed fruits and vegetables (43.0%) along with fresh meat (34.6%) daily, while fresh fish (37.0%), bread (34.6%), dairy products (36.1%), frozen food (40.0%) as well as cake and biscuits (34.6%) were consumed 2-3 times a week. Canned food (27.8%) was consumed once a week, whereas ready-made meals (31.6%), chocolate and candies (26.0%) along with wine, beer and other alcoholic drinks (76.7%) were consumed less than a fortnight or never by the participants. Individual’s risk perception of COVID-19 might be a possible cause that led to changes in food consumption and those with higher risk perception of the virus tend to be more concerned and practice a healthier diet with the intention of strengthening their immune system (Rodríguez-Pérez et al., 2020). There is a possibility that students may have a higher risk perception that led to a shift in dietary habits during MCO. The MCO implementation had increased the consumption of ready-made meals and “comfort foods” such as chocolate, candies, and snack food items have been demonstrated elsewhere (Scarmozzino and Visioli, 2020).

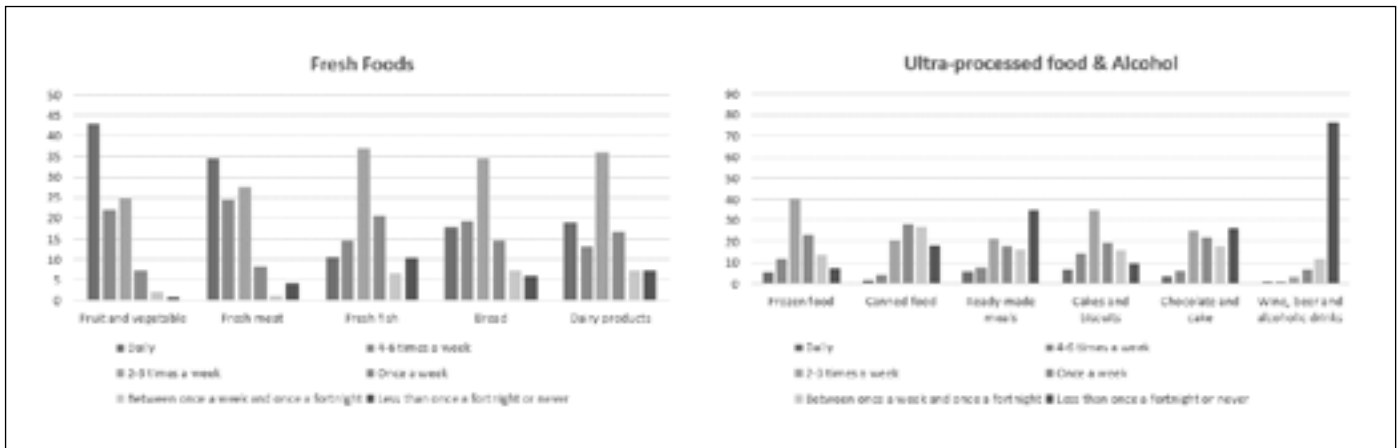


Figure 2: Frequency of food consumed by participants during the pandemic (n=335)

3.3 Stress, Emotional Eating and Its Association

Table 2 shows the stress intensity and emotional eating status of participants according to gender. About half (48.4%) of the participants were classified under the high stress group, and this prevalence was higher than other studies conducted during the first Malaysian MCO where 22% and 40% were moderately to severely stressed as reported by Wan Mohd Yunus (2021) and Cheng and Kamil (2020), respectively. Females were found to have dominated both stress groups in the present study, similar trend was reported by Graves et al. (2021), and majority (74.6%) of them were classified as non-emotional eaters. The prevalence of male emotional eaters (30.3%) was higher than females (23.6%) in this study, similar result was reported in Cheng and Wong (2021) study. It was expected that during MCO many may experience drastic changes in eating behaviours that may lead to overeating (Haddad et al., 2020).

There was a significant association between stress and emotional eating among undergraduate students in Klang Valley during the COVID-19 pandemic ($\chi^2=7.494$, $p<0.05$) with 32.1% experienced high stress and 19.1% low stress levels were emotional eaters, respectively. This finding was supported by past studies that demonstrated eating being used as a stress relief method for those experiencing stress, this was linked to the high levels of cortisol released during stressful situations triggers the activity of eating (Epel et al., 2004; Oliver and Wardle, 1999). Furthermore, the association between EE with stressful life events along with perceived stress were also observed (Klatzkin et al., 2019; Michels et al., 2012).

3.4 Association between Food Consumption and Stress

There was no significant association found between the stress level and type of food consumed in the study (Table 3). Errisuriz et al. (2016) also reported no association was found between stress and the consumption of fruits and vegetables, fresh meat, fresh fish, and dairy products. In addition, no significant association was found between stress level and ultra-processed foods and “comfort foods” in the present study. Positive association was reported

Table 2: Stress level and emotional eating status of participants according to gender and stress level by emotional eating status of participants (n=335)

Variable	Male (n=89) n (%)	Female (n=246) n (%)	χ^2 value
Stress level			$\chi^2=0.066$
Low stress	47 (27.2)	126 (72.8)	p=0.797
High stress	42 (25.9)	120 (74.1)	
Emotional eating status			$\chi^2=1.577$
Non-emotional eaters	62 (69.7)	188 (76.4)	p=0.209
Emotional eaters	27 (30.3)	58 (23.6)	
	Low Stress (n=173) n (%)	High Stress (n=162) n (%)	χ^2 value
Emotional eating status			$\chi^2=7.494$
Non-emotional eaters	140 (80.9)	110 (67.9)	p=0.006*
Emotional eaters	33 (19.1)	52 (32.1)	

*Chi-square test with significance at $p<0.05$.

between chronic stress and the consumption of foods that are highly palatable and lack nutrients along with the activation of the endogenous opioid (reward) system with a reduced hypothalamic-pituitary-adrenal (HPA) axis stress response that alleviates stress (Papier et al., 2015). Among the studies conducted on college students, there was an association between high levels of stress and increased favour towards ultra-processed foods (Errisuriz et al., 2016). The occurrence of the pandemic and MCO have increased perceived stress levels in participants, which in-turn affects healthy eating behaviour and promotes the tendency of “comfort foods” consumption and decrease the consumption of healthy and nutrient-dense foods (Buckland et al., 2021).

Table 3: Association between types of food consumed and stress level (n=335)

Variable	Stress level, n (%)		χ^2 value
	Low stress	High stress	
Fruits and vegetables			$\chi^2=6.741$ p=0.241
Fresh meat			$\chi^2=8.134$ p=0.149
Fresh fish	173 (51.6)	162 (48.4)	$\chi^2=3.439$ p=0.633
Bread			$\chi^2=5.401$ p=0.369
Dairy			$\chi^2=4.930$ p=0.424
Frozen food products			$\chi^2=7.077$ p=0.215
Canned food			$\chi^2=5.403$ p=0.369
Ready-made meals			$\chi^2=11.010$ p=0.051
Cake and biscuit	173 (51.6)	162 (48.4)	$\chi^2=1.626$ p=0.898
Chocolates, candies			$\chi^2=4.981$ p=0.418
Wine, beer and other alcoholic drinks			$\chi^2=1.466$ p=0.917

CONCLUSION

The implementation of MCO due to the COVID-19 pandemic had been found to be associated with the shift in behavioural nutrition among undergraduate students that includes the occurrence of emotional eating, high perceived level of stress, changes in food purchase and consumption. Thus, more studies on the impact of the MCO on human’s nutrition, eating habits and psychological aspects are recommended to better understand and monitor the well-being of all individuals in the future.

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