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# The Association Between Stress and Eating Habits Among Medical Students in IMU University, Malaysia

(***Running Title:*** *Stress and Eating Habits among Medical Students*)

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**Abstract**

**Background:** Stress is a state of mental strain or anxiety triggered by a challenging or demanding situation. It is a natural reaction that helps us confront and manage difficulties and threats in our lives. While stress is a common experience for everyone, how we handle it significantly impacts our overall well-being. Given the concern over stress-related unhealthy dietary habits, a study conducted among medical students at a private university in Malaysia found a high prevalence of overweight and obesity, highlighting the importance of promoting a healthy lifestyle among these students.

**Objectives:** To determine the association between stress and eating habits among medical students in IMU University, Malaysia. Furthermore, to determine the prevalence of stress among medical students in IMU University, Malaysia. Finally, to determine the eating habits among medical students in IMU University, Malaysia.

**Methods:** A cross-sectional study was conducted from July 2023 to September 2024 to explore the association between stress and eating habits among medical students in IMU University, Malaysia. The target population for this study included full-time medical students from Semester 1 to Semester 10 at IMU University, Malaysia. This encompassed both local and international students from Bukit Jalil Campus, Seremban, Kluang and Batu Pahat Clinical Campus who provided their consent to participate. The sample size was calculated using an online Cochrane sample size calculator, where the target population size was 1401, the margin of error was 5% and the confidence level was 95%.

**Results:** The BMI category demonstrated a highly significant association with stress-induced eating, as evidenced by a p-value of less than 0.001, which is far below the 0.05 threshold. Comparison of stress levels based on various eating habits revealed varying degrees of significance. The study revealed that daily snacking ($p = 0.004$), less frequent vegetable intake ($p = 0.006$) and less frequent fruit consumption ($p = 0.002$) were associated with higher stress levels, while more frequent purchases of take-away food from Western fast-food restaurants ($p = 0.044$) are linked to lower stress.

**Conclusion:** The prevalence of stress among medical students at IMU University, Malaysia, was significantly high, with positive associations observed between elevated stress levels and unhealthy eating habits. These findings underscore the need for targeted interventions to support medical students in managing stress more effectively and adopting healthier dietary practices. Prioritising psychological well-being and promoting balanced eating habits among medical students should be a key focus for institutional efforts moving forward.

**Keywords**: Stress, Eating Habits, Medical Students, Cross-sectional

## 1. Introduction

According to the World Health Organization (WHO), stress is a state of mental strain or anxiety triggered by a challenging or demanding situation. It is a natural reaction that helps us confront and manage difficulties and threats in our lives. While stress is a common experience for everyone, how we handle it significantly impacts our overall well-being [1]. It is undeniable that the two factors between stress and medical students are closely intertwined and often go hand-in-hand.

There are various stressors encountered by university students in general, these include the pressure to achieve academically, peer competition, heavy workload, adapting to new living environments, socializing with new people and occasionally dealing with financial challenges [2]. The ten primary academic stressors identified were: tests and examinations, the extensive volume of materials to cover, limited time for review, unsatisfactory grades, high personal expectations, inadequate

clinical skills, falling behind on the reading schedule, a heavy workload, challenges in comprehending the material and difficulty answering teachers' questions. The recent study indicates that stress levels among Malaysian medical students are alarmingly high, reaching up to 56% [3]. Medical education is widely regarded as stressful and elevated stress levels can adversely impact cognitive function and the learning experience of medical students [4].

Research has shown that food serves not only as a source of nutrition and health benefits but also as a coping mechanism to manage stress and navigate unpleasant situations. Terms like emotional eating, comfort eating, and stress-induced eating are used to describe the recurrent pattern of eating as a way to manage unpleasant psychological states [5]. Besides, a study revealed that Malaysian adolescents experiencing high levels of stress were more prone to engaging in unhealthy eating behaviours, such as overeating, frequent snacking and consuming foods high in fat and sugar [6].

Given the concern over stress-related unhealthy dietary habits, a study conducted among medical students at a private university in Malaysia found a high prevalence of overweight and obesity, highlighting the importance of promoting a healthy lifestyle among these students [7].

## 2. Methods

A cross-sectional study was conducted from July 2023 to September 2024 to explore the association between stress and eating habits among medical students in IMU University, Malaysia. The target population for this study included full-time medical students from Semester 1 to Semester 10 at IMU University, Malaysia. This encompassed both local and international students from Bukit Jalil Campus, Seremban, Kluang and Batu Pahat Clinical Campus who provided their consent to participate.

Convenience sampling, a non-probability sampling technique, was utilized to distribute the online questionnaire to a readily available pool of respondents. This approach was chosen to facilitate data collection and maximize the response rate. The sample size was calculated using an online Cochrane sample size calculator, where the target population size was 1401, the margin of error was 5% and the confidence level was 95%. Using the sample size formula provided, the minimum recommended sample size was calculated to be 302 out of a target population of 1401.

An online structured questionnaire was created using Google Forms and distributed to all eligible undergraduate medical students from Semester 1 to Semester 10 at IMU University, Malaysia, via Microsoft Teams and WhatsApp. The form was closed after the deadline and the collected data was exported to an Excel spreadsheet for analysis. An online structured questionnaire, comprising four sections, was developed using Google Forms and was based on the research paper by Jasim N. Al-Asadi titled "Perceived Stress and Eating Habits among Medical Students" (2014). Our research questionnaire is based on the study by Jasim N. Al-Asadi, titled "Perceived Stress and Eating Habits among Medical Students" (2014), which was adapted from previously published research. This foundation supports the validity and reliability of the questionnaire.

Data collected were analyzed using IBM SPSS Statistics Software, version 28. Descriptive statistics were employed to generate frequencies, means, standard deviations, and total scores for the Cohen Perceived Stress Scale. Inferential statistics, including the Chi-Square test, Independent-sample T-test, and one-way ANOVA, were applied to identify significant correlations between sociodemographic factors, eating habits and stress levels.

## 3. Results

### 3.1 Sociodemographic Factors

A total of 361 responses were received, of which 353 were deemed valid for analysis, giving an overall response rate of 97.78 %. Majority of the participants were female, comprising 66.9% of the sample. Regarding academic progression, 57.5% of participants were in their clinical years. Based on self-reported weight and height data, 51.0% of participants fell within the normal BMI range, while 31.7% were classified as overweight or obese.

**Table 1:** Sociodemographic Factors among the Study Population (N=353)

| Sociodemographic Factors | | n (%) |
|---|---|---|
| Gender | Male | 117 (33.1) |
| | Female | 236 (66.9) |
| Semester | Pre-Clinical Year | 150 (42.5) |
| | Clinical Year | 203 (57.5) |
| BMI | Underweight | 61 (17.3) |
| | Normal | 180 (51.0) |
| | Overweight | 76 (21.5) |
| | Obese | 36 (10.2) |

### 3.2 Types of Dietary Practices

The most common dietary practice among participants was a non-selective approach, with 38.5% reporting that they eat whatever food is available without particular preferences. In contrast, only 1.7% of participants followed a specific weight loss diet menu.

**Table 2:** Types of Dietary Practices among the Study Population (N=353)

| Types of Dietary Practices | n (%) |
|---|---|
| Reduce high fat and high sugar foods | 80 (22.7) |
| Reduce high fat, high sugar and red meat foods | 34 (9.6) |
| Reduce high fat food | 12 (3.4) |
| Vegetarians | 8 (2.3) |
| Eat according to a specific weight loss diet menu | 6 (1.7) |
| No special diet menu but eat less to lose weight | 64 (18.1) |
| Not choosy on the types of food eaten and eat any food available | 136 (38.5) |
| Others | 13 (3.7) |

### 3.3 Stress Level

A total of 86.1% of participants reported moderate to high stress levels, while only 13.9% exhibited low stress levels.

**Table 3:** Stress Level among the Study Population.

| Stress Level (Category) | n (%) |
|---|---|
| Low | 49 (13.9) |
| Moderate | 249 (70.5) |
| High | 55 (15.6) |

### 3.4 Comparison of BMI

Comparison of BMI based on different sociodemographic factors was conducted. The results reveal no statistically significant differences. For gender, the mean BMI for males (22.79 ± 4.06) was higher than that for females (21.52 ± 3.75). However, with a p-value of 0.196, this difference is not statistically significant ($p > 0.05$). Similarly, for year of study, pre-clinical students had a mean BMI of 21.82 ± 3.70 compared to 22.03 ± 4.04 for clinical year students, but this difference was also not significant, as indicated by a p-value of 0.688 ($p > 0.05$). These results suggest that neither gender nor year of study have a statistically significant effect on BMI in this sample.

**Table 4:** Comparison of BMI based on Sociodemographic Factors

| Sociodemographic Factors | Mean ± SD | F value | t value | Asymp.Sig (P-value) |
|---|---|---|---|---|
| Gender | | | | |
| Male Female | 22.79 ± 4.06<br>21.52 ± 3.75 | 1.682 | 2.919 | 0.196 |
| Semester | | | | |
| Pre-Clinical Year Clinical Year | 21.82 ± 3.70<br>22.03 ± 4.04 | 0.161 | -0.503 | 0.688 |

### 3.5 Comparison of Stress Level

Comparison of stress levels based on sociodemographic factors show no statistically significant differences. For gender, males reported a mean stress level of 18.74 ± 6.50 compared to females with 20.75 ± 5.95. However, the p-value of 0.223 ($p > 0.05$) indicates that this difference is not statistically significant. Regarding year of study, pre-clinical students had a mean stress level of 20.17 ± 6.13, slightly higher than clinical students at 20.02 ± 6.27, but this difference is also not statistically significant with a p-value of 0.804 ($p > 0.05$). For BMI categories, there were no significant differences in stress levels across underweight, normal, overweight, and obese groups. While the stress level was highest among underweight individuals (21.71 ± 6.30), followed by overweight (20.51 ± 6.12) and obese participants (20.14 ± 8.14), with the lowest in the normal BMI group (19.34 ± 5.67), the p-value of 0.068 ($p > 0.05$) suggests that these differences are not statistically significant.

**Table 5:** Comparison of Stress Level based on Sociodemographic Factors.

| Sociodemographic Factors | Mean ± SD | F value | t value | Asymp.Sig (P-value) |
|---|---|---|---|---|
| Gender | | | | |
| Male Female | 18.74 ± 6.50<br>20.75 ± 5.95 | 1.492 | -2.910 | 0.223 |
| Semester | | | | |
| Pre-Clinical Year Clinical Year | 20.17 ± 6.13<br>20.02 ± 6.27 | 0.062 | 0.230 | 0.804 |
| BMI | | | | |
| Underweight Normal<br>Overweight Obese | 21.71 ± 6.30<br>19.34 ± 5.67<br>20.51 ± 6.12<br>20.14 ± 8.14 | 2.393 | - | 0.068 |

### 3.6 Comparison of Stress-Induced Eating Behaviour

Comparison of stress-induced eating behavior across sociodemographic factors reveal varying degrees of significance. In terms of gender, the p-value of 0.110, which is greater than the significant threshold of 0.05, indicates no statistically significant association between being male or female and engaging in stress-induced eating behavior. Similarly, the p-value of 0.664 for year of study between pre-clinical and clinical, which is much greater than 0.05, suggests no significant relationship between a student's year of study and their likelihood of experiencing stress-induced eating behavior. However, the BMI category demonstrates a highly significant association with stress-induced eating, as evidenced by a p-value of less than 0.001, which is far below the 0.05 threshold. Results revealed that prevalence of stress-induced eating behavior was the lowest within the underweight category, at 19.67 %, as compared to overweight (61.84 %) and obese (58.33 %) categories.

**Table 6:** Comparison of Stress-Induced Eating Behavior based on Sociodemographic Factors

| **Sociodemographic Factors** | **Stress-Induced Eating Behavior** | | **Asymp.Sig (P-value)** |
|---|---|---|---|
| | **Yes** | **No** | |
| Gender | | | |
| Male Female | 46<br>114 | 71<br>122 | 0.110 |
| Semester | | | |
| Pre-Clinical Year Clinical Year | 70<br>90 | 80<br>113 | 0.664 |
| BMI | | | |
| Underweight Normal Overweight<br>Obese | 12<br>80<br>47<br>21 | 49<br>100<br>29<br>15 | < 0.001 |

### 3.7 Eating Habits

In this study, 53.8% of the participants reported not consuming breakfast daily. When it comes to meal frequency, 50.7% of the participants typically have three meals per day, while 56.4% snack only a few days a week. Daily vegetable consumption was observed in 53.3% of the participants and 56.7% reported eating fruits a few days a week. A majority (63.2%) ate at hawker stalls, coffee shops, or other food stalls a few days a week. Additionally, 81.6% of participants ate at Western fast-food restaurants less than weekly and 77.9% bought or took away food from these establishments with the same frequency.

**Table 7:** Eating Habits among the Study Population

| Eating Habits | | n (%) |
|---|---|---|
| Daily Breakfast Consumption | Yes | 163 (46.2) |
| | No | 190 (53.8) |
| Number of Meals | 1 | 18 (5.1) |
| | 2 | 144 (40.8) |
| | 3 | 179 (50.7) |
| | 4 | 11 (3.1) |
| | ≥ 5 | 1 (0.3) |
| Frequency of Snacking | Daily | 51 (14.4) |
| | Few days a week | 199 (56.4) |
| | Less than weekly | 103 (29.2) |
| Frequency of Vegetable Intake | Daily | 188 (53.3) |
| | Few days a week | 141 (39.9) |
| | Less than weekly | 24 (6.8) |
| Frequency of Fruit Intake | Daily | 43 (12.2) |
| | Few days a week | 200 (56.7) |
| | Less than weekly | 110 (31.2) |
| Frequency of Eating at Hawker, Coffee Shops or other Food Stalls | Daily | 56 (15.9) |
| | Few days a week | 223 (63.2) |
| | Less than weekly | 74 (21.0) |
| Frequency of Eating at Western Fast-Food Restaurants | Daily | 3 (0.8) |
| | Few days a week | 62 (17.6) |
| | Less than weekly | 288 (81.6) |
| Frequency of Buying / Take- Away Food from Western Fast- Food Restaurant | Daily | 5 (1.4) |
| | Few days a week | 73 (20.7) |
| | Less than weekly | 275 (77.9) |

### 3.8 Comparison of Stress Level

Comparison of stress levels based on various eating habits reveals varying degrees of significance. The study reveal that daily snacking ($p = 0.004$), less frequent vegetable intake ($p = 0.006$) and less frequent fruit consumption ($p = 0.002$) are associated with higher stress levels, while more frequent purchases of take-away food from Western fast-food restaurants ($p = 0.044$) are linked to lower stress. In contrast, no significant associations were found between stress levels and breakfast consumption, number of meals, eating at hawker stalls or eating at Western fast-food restaurants ($p > 0.05$). Overall, snacking, vegetable and fruit intake and take-away food frequency significantly affect stress levels, while other eating habits do not.

**Table 8:** Comparison of Stress Level based on Eating Habits.

| Eating Habits | Mean ± SD | F value | Asymp.Sig (P-value) |
|---|---|---|---|
| **Daily Breakfast Consumption** | | | |
| Yes | 19.18 ± 5.60 | 2.574 | 0.110 |
| No | 20.86 ± 6.59 | | |
| **Number of Meals** | | | |
| 1 | 21.56 ± 8.55 | 1.668 | 0.157 |
| 2 | 20.90 ± 6.41 | | |
| 3 | 19.31 ± 5.76 | | |
| 4 | 19.36 ± 5.03 | | |
| ≥ 5 | 23.00 | | |
| **Frequency of Snacking** | | | |
| Daily | 22.26 ± 5.98 | 5.676 | 0.004 |
| Few days a week | 20.22 ± 5.89 | | |
| Less than weekly | 18.76 ± 6.60 | | |
| **Frequency of Vegetable Intake** | | | |
| Daily | | | |
| Few days a week | 19.19 ± 6.43 | 5.235 | 0.006 |
| Less than weekly | 20.84 ± 5.81 | | |
| | 22.67 ± 5.46 | | |
| **Frequency of Fruit Intake** | | | |
| Daily | 17.07 ± 6.29 | 6.536 | 0.002 |
| Few days a week | 20.23 ± 5.94 | | |
| Less than weekly | 21.00 ± 6.33 | | |
| **Frequency of Eating at Hawker, Coffee Shops or other Food Stalls** | | | |
| Daily | | | |
| Few days a week | 20.00 ± 5.77 | 0.124 | 0.884 |
| Less than weekly | 20.20 ± 6.13 | | |
| | 19.80 ± 6.77 | | |
| **Frequency of Eating at Western Fast-Food Restaurants** | | | |
| Daily | | | |
| Few days a week | 19.67 ± 12.34 | 1.350 | 0.261 |
| Less than weekly | 21.26 ± 5.29 | | |
| | 19.84 ± 6.31 | | |

## 4. Discussions

Our study revealed that the majority of participants experienced moderate to high levels of stress. This aligns with the findings of Satpathy et al. (2021), who reported that 91% of medical undergraduate students faced high levels of stress [23]. These elevated stress levels can be attributed to factors such as heavy academic workloads, frequent examinations and peer competition. However, when compared to domestic literature, our study's prevalence of stress was notably higher than the reported range of 29.6% to 56% [3, 8-10]. This discrepancy could be due to differences in the module system, increased assignment demands and higher expectations from lecturers. Further research is needed to identify the specific factors contributing to these heightened stress levels. A better understanding of these causes would support the development of proactive interventions to reduce the negative impact of stress on the personal and professional development of medical students [24].

Our study identified a concerning trend of unhealthy eating habits among medical students in IMU University, Malaysia, with majority of the participants reported skipping breakfast, frequent snacking and limited consumption of fruits and vegetables. These findings are in line with various studies, which also highlight the inadequate dietary practices among medical students, a critical issue since proper nutrition is essential for cognitive function [12-16]. According to Alzahrani et al, common reasons for skipping breakfast include 'Time limitation', 'Oversleeping', 'Excessive body image concern', 'Lack of appetite' and 'Lack of parental control'[12]. The World

Health Organization (WHO) recommends a daily intake of at least 400 grams, or five servings, of fruits and vegetables excluding starchy root vegetables as part of a healthier diet [25]. However, our participants have frequently neglected the importance of fiber intake, with many failing to include fruits and vegetables in their daily meals. A study published in 2010 identified reasons for this, including shorter shelf life of fruits and vegetables, their perceived inability to satisfy hunger, high cost and unavailability [26]. Poor cafeteria options and dissatisfaction with the taste of fruits and vegetables may also contribute to the inadequate intake among our participants. Additionally, over half of the participants reported eating at hawker centers, coffee shops or food stalls several days a week. This behavior mirrors the findings of Gan et.al, where 79.79% of the participants consumed meals at such locations more than once a week [21]. This could be due to convenience and better tasting. Nevertheless, further studies are needed to better understand the underlying factors driving these eating habits among medical students in IMU University, Malaysia.

According to the study that we have done, there is indeed an association between BMI and Stress-induced eating. The result was further supported by a study from Slochower et al. (1981), who reported an increase in food consumption due to stress particularly in obese individuals [27]. Research suggests that non-obese individuals often rely on cognitive strategies to manage psychological challenges, whereas obese individuals may turn to overeating as a response to stress. This tendency to stress level can result in weight gain, eventually leading to overweight or obesity and subsequently, an increase in BMI levels. Therefore, elevated stress levels are strongly associated with this pattern, contributing to higher BMI and related health risks. Additionally, research has shown a strong link between BMI, elevated stress levels and emotional eating. Many studies indicate that negative emotions often lead to overeating, particularly of high-fat and sugary foods, while reducing the intake of healthier options like fruits and vegetables. This behaviour reflects a departure from healthy eating habits, such as skipping meals or consuming more calorically dense foods. Individuals dealing with emotional eating may use food to manage intense emotions, frequently choosing highly palatable, fat- and sugar-rich foods. Over time, excessive consumption of these foods can lead to weight gain, elevated BMI and health risks such as inflammation, oxidative stress and obesity [28]. Physiologically, stress activates the hypothalamic-pituitary-adrenal (HPA) axis, which influences insulin secretion, promoting the accumulation of abdominal fat [29].

The findings from this study showed a positive association between stress levels and certain unhealthy eating habits among medical students. Participants who snack frequently and have a lower intake of fruits and vegetables were more likely to have a higher stress level. Stress-induced snacking often involves high-sugar or high-fat foods, which may provide temporary relief but can worsen long-term health outcomes. A high intake of junk food, especially ultra-processed items, has been strongly linked to an increased risk of depression and psychological stress.[30] The relationship between stress and eating habits can become a vicious cycle, with studies showing that weight gain from unhealthy eating habits contributes to a decline in mental health.[30] Our findings further support this, revealing that obese individuals are more likely to engage in stress-induced eating, which may, in turn, amplify their stress levels over time. Research suggests that the consumption of unhealthy foods may negatively affect mental health by disrupting inflammatory processes, nutritional balance and neurotransmitter function.[30] Recently, gut dysbiosis has emerged as another potential pathway, with evidence indicating that the gut microbiome plays a role in modulating the body's response to stress.[31] Ultra-processed foods, in particular, contain additives and compounds produced during high-temperature cooking, which can impact gut microbiota and reduce nutrient absorption, contributing to elevated psychological stress.[30]

On the other hand, healthier eating practices, such as regular consumption of fruits and vegetables, have been associated with lower stress levels, indicating that individuals with better dietary habits may be more effective in managing stress. One study found that frequent fruit and vegetable intake was linked to a 10% reduction in perceived stress.[31] Furthermore, various research has shown that frequent consumption of healthy foods such as fruits, vegetables, whole grains and fish are associated with lower risk of stress and depression.[30] These salubrious diets are rich in tryptophan, an essential amino acid that is a precursor to serotonin, the neurotransmitter involved in regulating mood.[30] Additionally, fruit- and vegetable-rich diets provide bioactive compounds like vitamins, minerals and fiber, which have protective effects on mental health, influence brain neurotransmission and help regulate mood.[31] Polyphenols found in fruits and vegetables, with their anti-inflammatory, antioxidant, neuroprotective and prebiotic properties, have been positively linked to improved stress and mental well-being.[31] Fruits and vegetables are also excellent sources of ascorbic acid, which helps regulate the HPA axis by reducing hypercortisolemia and mitigating stress-related disorders.[32] In addition, ascorbic acid supplementation has been shown to effectively alleviate behavioral disturbances linked to stress.[32] This clearly highlights the vital role fruits and vegetables play in managing stress, emphasizing the importance of regular consumption.

Interestingly, our study revealed that participants who consumed take-away meals from Western fast-food outlets on a daily basis exhibited the lowest stress levels. This result contrasts with the study by Rosenberg et al. (2022), which demonstrated a positive correlation between high consumption of fast food and processed foods and elevated perceived stress.[33] It is well-established that adopting Western dietary patterns, which often include junk and fast foods, is associated with a greater risk of inflammatory conditions and cardiovascular diseases.[30] Inflammation, in turn, has been linked to various mental health disorders, including depression, anxiety and stress.[30] Additionally, research indicates that high- fat diets can decrease levels of brain-derived neurotrophic factor (BDNF), a protein essential for neuron maintenance and neurogenesis.[30] BDNF plays a key role in the pathogenesis of depression, and its reduction impairs synaptic function, cognitive ability and neuronal growth, all of which contribute to the development of psychological disorders.[30] Western diets, rich in polyunsaturated omega-6 fatty acids, increase the production of proinflammatory eicosanoids, reduce BDNF levels and decrease neuronal membrane fluidity.[30] This suggests that the harmful effects of junk and fast foods on mental health may be attributed to their high unhealthy fat content. The discrepancy between our findings and previous studies may stem from differences in study populations. However, further research is needed to uncover the potential reasons behind this contradiction.

## 5. Conclusion

In conclusion, our study found that the prevalence of stress among medical students in IMU University, Malaysia, was high, with a mean score of 20.09 ± 6.20 out of 40, as measured by the Cohen Perceived Stress Scale (PSS). Our study also revealed that a majority of medical students in IMU University, Malaysia, adopted unhealthy eating habits. Furthermore, we identified a significant association between elevated stress levels and unhealthy dietary habits, particularly increased frequency of snacking, consuming takeout from Western fast-food outlets and inadequate intake of fruits and vegetables. These findings support the alternate hypothesis, confirming a relationship between stress and eating patterns. Additionally, the study also revealed a significant correlation between BMI and stress-induced eating behaviors, suggesting that stress may influence weight-related health outcomes. These findings underscore the need for targeted interventions to support medical students in managing stress more effectively and adopting healthier dietary practices. Given the high prevalence of stress among medical students and its association with unhealthy eating behaviors, universities should prioritize the implementation of comprehensive wellness programs. These programs could focus on stress management techniques, promoting mental well-being and fostering a culture of healthy eating. Workshops on time management, mindfulness and coping strategies could help students better manage academic pressures. Additionally, providing healthier food options on campus and encouraging regular meal patterns may mitigate the negative effects of stress on students' eating habits. These interventions could be particularly effective in targeting at-risk groups, such as those with higher BMIs, who are more susceptible to stress- induced eating.

### Author Contributions

Rachel Chua Phik Chen and Sufeana binti Ramzan contributed to the literature review and discussion. Wong Wei Ying and Chin Yu Yi contributed to questionnaire and methodology. Every author contributed to manuscript writing. Han Rui Zhi and Mohamed Abdelwahab have critically reviewed and approved the final draft.

### Informed Consent

Informed consent was obtained from all individual participants included in the study.

### Ethical Approval

### Ethics of Study

This study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki and the Malaysian Good Clinical Practice Guideline. Accepted by the IMU Joint-Committee on Research and Ethics (IMU-JC) on 11 October 2023.

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### Conflicts of Interest

The authors declare that there are no conflicts of interest.

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### Competing of Interest

The authors declare that they have no conflicts of interest.

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