

Workplace Factors Shaping Unhealthy Food Choices Among Staff At Universiti Malaysia Sabah

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ABSTRACT

Unhealthy food consumption among workers is an issue with significant implications for physical and mental health. This study investigates the factors influencing unhealthy eating behaviors among staff workers at University Malaysia Sabah (UMS). Utilizing a quantitative research design, data from the Centre of Data and Information Management of UMS was used ($N = 343$), respondent are aged between 20 to 60 years old. A structured questionnaires were used to addressing workplace environmental barriers, stress-induced emotional eating, and the association between education level and healthy eating knowledge, the data were analyzed Statistical Package for Social Science (SPSS). The findings reveal that workplace factors, such as lack of healthy food options (mean= 4.13, SD= 0.94) and work pantry facilities (mean= 4.11, SD= 0.92), significantly hinder healthy eating. Stress levels showed a weak yet statistically significant correlation with emotional eating behaviors (Spearman's rho = 0.284, $p < 0.001$). Furthermore, a significant association was found between higher education levels and greater knowledge of healthy eating ($\chi^2 = 243.169$, $p < 0.001$). These results underscore the need for workplace interventions, including policy enhancements, stress management programs, and targeted nutritional education, to promote healthier eating behaviors and overall well-being among UMS workers.

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1. Introduction

Despite the benefits of eating healthily, many university staff workers, like other adults, do not consistently engage in these behaviours. Healthy eating refers to consuming a diet high in whole grains, fruits, vegetables, legumes, and nuts, while being low in salt, free sugars, and unhealthy fats such as saturated and trans fats (WHO, 2019). In contrast, unhealthy eating is characterised by a low intake of nutrient-dense foods and a high intake of sugary drinks, desserts, sweets, processed foods, and alcohol (Mello Rodrigues *et al.*, 2019). One form of unhealthy eating is emotional eating, defined as eating in response to negative emotions such as stress, anxiety, or sadness rather than true hunger (Lopes Cortes *et al.*, 2021).

The low intake of vegetables, fruits, and whole grains, coupled with high consumption of sugary and processed foods, contributes to obesity and poor nutrition among working adults (Mello Rodrigues *et al.*, 2019). Regionally, the prevalence of overweight varies from 31% in the WHO South-East Asia and African regions to 67% in the Americas. Malaysia records the highest rates in Southeast Asia, with 64% of males and 65% of females classified as overweight or obese (WHO, 2019).

Globally, obesity has reached epidemic proportions, causing 2.8 million deaths annually, with 2.5 billion adults overweight and nearly 900 million obese (WHO, 2021; WHO 2022). Being overweight or obese raises the risk of cardiovascular disease and type 2 diabetes, which are leading contributors to premature death (Okunogbe *et al.*, 2024). Nationally, the 2023 Health and Morbidity Survey reported that 54.4% of Malaysian adults are overweight or obese (32.6% overweight; 21.8% obese), reaffirming Malaysia's critical standing in the region (IPH, 2021).

Multiple factors influence food choices among working adults, including social influences, attitudes toward food, taste preferences, and environmental conditions such as workplace surroundings, accessibility, and price (Mamun *et al.*, 2020). Psychological factors are equally important; studies on young adults reveal that stress and poor coping strategies contribute to unhealthy eating (Lopes Cortes *et al.*, 2021). Although based on young adults, these findings remain relevant, as stress-related eating patterns are also common among university staff. In Malaysia, 72% of employees exceed recommended sedentary time, while 58% report moderate to high stress (Ismail & Qi, 2025). Stress frequently triggers emotional eating, with prevalence rates of 30–45% in working populations globally (Shatwan & Alzharani, 2024; Nolan *et al.*, 2024).

Hence, this research aims to explore factors influencing unhealthy eating behaviours of staff workers. Understanding workplace-related barriers to healthy eating may contribute to the existing literature on nutrition, public health, and workplace wellness. Identifying the correlation between stress levels and emotional eating behaviour in hopes of recognizing factors contributing to unhealthy eating habits can help in tackling the issue concerning rates of health deterioration among adults in the working industry. Lastly, assessing the relationship between the education level of workers and their knowledge on healthy eating can help develop targeted nutrition education initiatives to promote healthier eating behaviours in the workplace.

2. Materials and Methods

2.1 Research design

This study employed a cross-sectional survey design to examine the relationship between workplace factors, stress, and unhealthy eating behaviours among university staff. This quantitative research focuses on gathering and analyzing numerical data. It is useful for identifying patterns, calculating averages, making predictions, and applying findings to a larger population.

2.2 Population and Sampling

The target population of this study include the staff workers in University Malaysia Sabah. Based on information obtained from the Centre of Data and Information Management of UMS, there is a total population of 3,205 staff members working at UMS. The collected samples are measured using the Krejcie and Morgan (1970) model theory and used to determine the number of respondents needed to be involved in this survey. Based on the Krejcie and Morgan table, the estimated number of workers in UMS consists of a total of 3,205 staff and lecturers combined; hence, the minimum sample size for this survey will involve 343 respondents.

2.3 Sampling method

This study used random sampling to ensure all Universiti Malaysia Sabah (UMS) staff had an equal chance of being selected. As the researcher, I visited each faculty and provided the survey link to the Faculty Administration Office, which then distributed it to academic staff through faculty email lists or WhatsApp groups. While this method gave all staff the opportunity to participate, the final sample consisted only of those who chose to respond. As a result, the respondents may not fully represent the entire UMS staff population, and this self-selection introduces the possibility of sampling bias.

2.4 Research Instrument

The questionnaire consisted of five parts (A–E). Part A collected nominal demographic data. Parts B, C, and D measured ordinal data using a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree). Part B included six items on perceived barriers to healthy eating in the workplace, adapted from Lima *et al.*, (2021). Part C consisted of 13 items on emotional eating behaviour, adapted from Subramaniam (2017). Part D contained 10 items from the Perceived Stress Scale (PSS), a validated instrument developed by Cohen *et al.*, (1983). Both Part C and Part D demonstrated strong internal consistency in the pilot study, with Cronbach's alpha values of 0.905 and 0.725, respectively. Finally, Part E assessed knowledge on healthy eating through nine multiple-choice questions adapted from Mambrini (2023) and Kana'an (2021). Although this section obtained a lower Cronbach's alpha of 0.613, it was considered acceptable for exploratory research.

2.5 Data Collection Process

Data collection was conducted within Universiti Malaysia Sabah (UMS) over four weeks using an online questionnaire via Google Forms. Ethical approval was not required as the study posed minimal risk and was carried out in an academic setting. However, all ethical standards were observed. Participation was voluntary, and informed consent was obtained from all respondents. They were assured of confidentiality and anonymity, and that the data would be used solely for research purposes. A total of 343 respondents completed the questionnaire.

2.6 Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS, Version 29). Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the demographic characteristics of respondents such as gender, age, monthly spending, and education level, as well as responses from the Likert-scale sections. Spearman's rank correlation was used to measure the relationship between stress levels and emotional eating behavior among staff workers at Universiti Malaysia Sabah. This non-parametric test was selected instead of Pearson's correlation because the data were ordinal and did not meet the assumptions of normality. The Chi-square test of independence was applied to determine the association between education level and knowledge of healthy eating. This test was suitable as both variables were categorical, allowing examination of whether a significant relationship existed between them.

2.7 Spearman's Correlation Test

Spearman's rank correlation was employed to assess the strength and direction of the relationship between stress levels and emotional eating behavior among UMS staff. This test was appropriate for the study as it analyzes associations between two ordinal variables that do not follow a normal distribution.

2.8 Chi-Square Test

The Chi-square test of independence was used to examine the association between the education level of staff workers and their knowledge of healthy eating. Education level was categorized into five groups (secondary school, diploma, bachelor's, master's, and doctorate), while knowledge level was classified as low, moderate, or high. The Chi-square test was suitable as both variables were categorical, allowing the determination of whether a statistically significant association existed.

3. Results and Discussion

3.1 Demographic information of the respondents

Table 1: Demography Profile

Demography Profile	Category	Frequency	Percentage (%)
Gender	Male	164	47.8
	Female	179	52.2
Age	18-25	114	33.2
	26-35	108	31.5
	36-45	103	30.0
	46-55	18	5.2
How much do you typically spend on food per month?	<RM200	24	7.0
	RM200-RM399	192	56.0
	RM400-RM599	85	24.8
	RM600-RM799	31	9.0
	>RM800	11	3.2
Education level	Secondary school certificate	32	9.3
	Diploma or technical school certificate	111	32.4
	Bachelor's degree	130	37.9
	Master's degree	58	16.9
	Doctoral degree	12	3.5

Table 1 presents the demographic profile of the 343 respondents. The sample consisted of 52.2% female (n = 179) and 47.8% male (n = 164) respondents. Most respondents were aged between 18–25 years (33.2%, n = 114), followed by those aged 26–35 years (31.5%, n = 108) and 36–45 years (30.0%, n = 103), with only 5.2% (n = 18) aged 46–55 years.

In terms of monthly food expenditure, more than half of the respondents (56.0%, n = 192) reported spending between RM200–RM399 on food, while 24.8% (n = 85) spent RM400–RM599. A smaller portion spent less than RM200 (7.0%, n = 24) or more than RM800 (3.2%, n = 11) per month. This suggests that most respondents maintain moderate food spending, which could influence how they perceive the affordability of healthy food options.

Regarding education level, the largest group held a bachelor's degree (37.9%, n = 130), followed by diploma holders (32.4%, n = 111) and master's degree holders (16.9%, n = 58). A smaller proportion had secondary school certificates (9.3%, n = 32) or doctoral degrees (3.5%, n = 12). The relatively high educational attainment among respondents indicates a generally good awareness of nutrition and healthy eating, aligning with the study's focus on how education influences knowledge of healthy food practices.

3.2 Perceived Workplace Barriers for Healthy Eating Among Staff Workers In University Malaysia Sabah

One of the objectives in this study was to identify perceived workplace barriers for healthy eating among staff workers in University Malaysia Sabah. There are six questions formatted on a 5-point Likert scale asked of the respondents about environmental factors in the workplace that are perceived as barriers to healthy eating. The type of analysis used to fulfil this objective was the descriptive analysis, where the mean value and standard deviation were considered for each question.

Perceived workplace barriers	Question No
1. I do not like the taste of healthy foods.	Q1
2. Price of healthy foods is inconvenient for me.	Q2
3. Distance to food stores affects my accessibility to healthy foods.	Q3
4. Work commitments/lack of time affect eating healthily at workplace.	Q4
5. Lack of healthy options for breakfast and lunch in workplace.	Q5
6. Lack of storage facilities and food preparation in workplace.	Q6

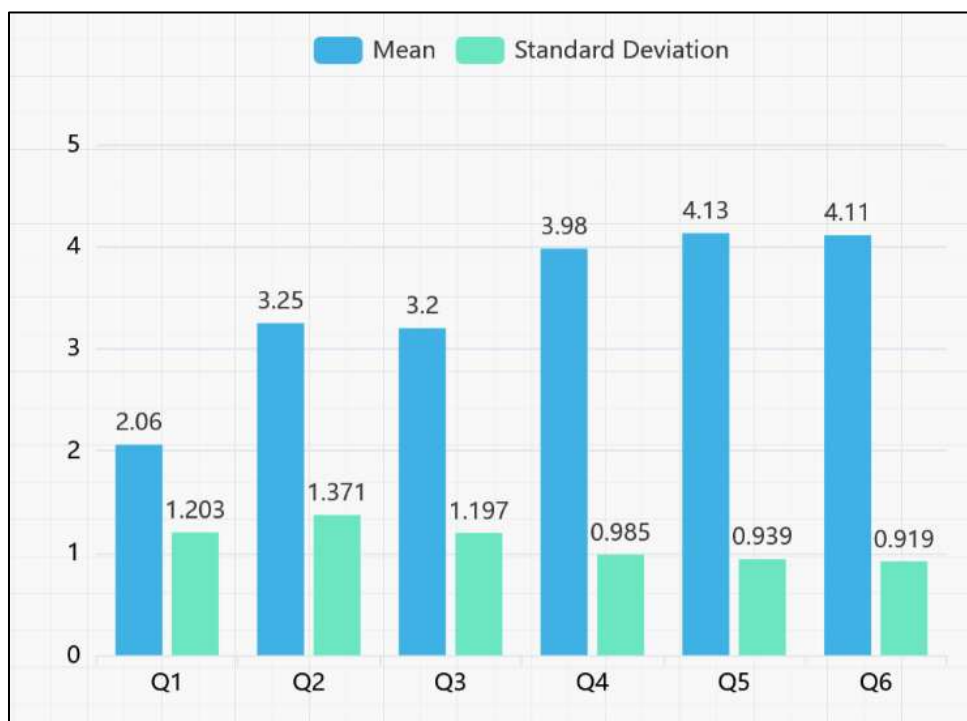


Figure 1: Perceived Workplace Barriers for Healthy Eating

The findings indicate that respondents generally disagreed that they do not like the taste of healthy food (mean = 2.06 ± 1.20). This suggests that taste is not a major deterrent to healthy eating among UMS staff. Similar trends have been reported in Malaysia, where post-pandemic lifestyle changes encouraged individuals to adopt healthier dietary practices, including more frequent home-cooked meals and improved adherence to dietary guidelines (Aimanan *et al.*, 2024). These findings support the idea that taste preference is becoming less of a barrier as health awareness and appreciation for nutritious foods increase among Malaysians.

This could mean that, based on recent trends, there is growing evidence that working adults are increasingly leaning towards healthier food options, with a greater focus on wellness and preventative nutrition, particularly driven by factors like increased awareness of the health risks associated with processed foods and a post-pandemic focus on overall well-being. Therefore, this suggests that taste is not a significant perceived barrier to healthy eating among staff workers at UMS.

The mean score of 3.25 ± 1.37 on the price of healthy foods being inconvenient for respondents indicates a neutral to slightly agree stance, suggesting mixed opinions about cost as a barrier. This variation could be attributed to differences in income levels between UMS staff workers and lecturers.

According to an international financial institution, the minimum cost of a healthy diet in Malaysia is estimated at RM5.94 per person per day (Pfordten & Dzulkifli, 2024). For a working adult, eating healthy food daily for a month would cost at least RM200. From the demographic data, most respondents reported monthly food expenditures of RM200–399, which aligns with the minimum cost of a healthy diet. This range suggests that many UMS employees might find the price of healthy food manageable or neutral. However, for some, especially lower-income staff workers, the cost may still pose a challenge depending on other financial priorities. Therefore, the neutral to slightly agree stance reflects a nuanced perspective: while price may not be a significant perceived barrier for healthy eating for many UMS employees, it could still affect some individuals.

The mean score of 3.20 ± 1.20 indicates neutrality to slight agreement among respondents on the distance to food stores affecting their accessibility to healthy foods. While distance may be a significant factor for some individuals, it does not appear to be a universal issue. Research suggests that limited access to large grocery stores can lead to greater reliance on smaller stores and restaurants, which often offer fewer healthy options (Larimore & Ploeg, 2018). This reliance can contribute to poor diet quality and an increased risk of diet-related health problems. In the context of UMS, this finding implies that distance to food stores could be one of the perceived barriers to healthy eating, particularly for workers without easy access to transportation or those living in areas with fewer healthy food options.

The mean score of 3.98 ± 0.99 shows that respondents generally agree with question 4, suggesting work commitments and time constraints are a significant barrier to healthy eating among staff workers in UMS. This finding aligns with studies showing that working at higher education institutions often leads to a heavier workload and more responsibilities, with some lecturers handling additional classes. This increased workload contributes to greater work commitments, leaving little time for taking breaks, preparing, or consuming healthy meals. (Avargues & Borda, 2010). This could mean that the busy work environment and the need to balance multiple academic and administrative duties may further exacerbate the difficulty of maintaining healthy dietary habits among staff workers in UMS.

The lack of healthy options for breakfast and lunch in the workplace shows the highest mean score of 4.13 ± 0.94 , indicating strong agreement among UMS staff workers. Previous research has demonstrated that the availability or easy access to unhealthy food options can significantly impact on the eating habits of employees in a negative way (Onufrak *et al.*, 2019). On the other hand, having access to nutritious and affordable food options at the workplace can enhance employees' food choices (Dodson *et al.*, 2016). This finding implies that the lack of healthy options for breakfast and lunch in the workplace is one of the main perceived barriers to healthy eating among staff workers in UMS.

The lack of storage facilities and food preparation in the workplace also shows a high mean score of 4.11 ± 0.92 , indicating that respondents strongly agree with it. This finding highlights the importance of workplace infrastructure in enabling healthy dietary habits. Without adequate facilities, as in work kitchen pantry such as refrigerators, microwaves, or designated meal preparation areas, employees may find it difficult to store and prepare healthy meals, leading to increased reliance on processed or fast-food options that are typically less nutritious. Research has shown that the availability of storage and food preparation facilities at the workplace is a key factor influencing dietary choices (Lima *et al.*, 2021). Employees with access to such facilities are more likely to bring home-cooked meals, which tend to be healthier compared to meals purchased outside. In contrast, the absence of these resources limits options, forcing workers to depend on food from campus cafeterias, vending machines, or nearby restaurants, which may not always offer balanced or nutritious meals.

In conclusion, a healthy-option availability (mean = 4.13, SD = 0.94) and pantry facilities (mean = 4.11, SD = 0.89) received the highest agreement ratings, followed by time constraints (mean = 3.98, SD = 0.92). Price (mean = 3.25, SD = 1.03) and distance to outlets (mean = 3.20, SD = 1.05) were viewed as neutral barriers, while taste was mostly disregarded (mean = 2.06, SD = 1.01). Collectively,

these results echo prior work showing that food availability strongly shapes on-site eating behaviour (Onufrak et al., 2019; Dodson et al., 2016) and underscore the urgency of restructuring the campus food environment to prioritise nutritious, affordable options.

3.3 The Correlation Between the Stress Levels and Emotional Eating Behaviour of Staff Workers in University Malaysia Sabah

This section examines the relationship between stress levels and emotional eating behaviour among staff workers at Universiti Malaysia Sabah (UMS). A total of 13 items assessing emotional eating behaviour were administered using a 5-point Likert scale, while stress levels were measured using the 9-item Perceived Stress Scale (PSS). Spearman's correlation test was used to analyse the data, as it is appropriate for non-parametric data and ordinal scales. The correlation coefficient (ρ) and the corresponding p-value were used to interpret the relationship between the two variables.

Data from 343 respondents were analysed. The results indicated a Spearman's correlation coefficient (ρ) of 0.284, with a significance level of $p < .001$, which is below the 0.05 alpha threshold. Therefore, the null hypothesis ($H_0: \rho = 0$) was rejected in favour of the alternative hypothesis ($H_1: \rho \neq 0$), indicating a statistically significant relationship between stress levels and emotional eating behaviour among staff workers at UMS.

The positive correlation suggests that higher stress levels are associated with greater emotional eating tendencies. However, while statistically significant, the relationship is weak ($\rho = 0.284$), indicating that stress explains only a small proportion of the variance in emotional eating behaviour. This implies that although stress contributes to emotional eating, other psychological, environmental, or individual factors likely play more substantial roles in shaping this behaviour.

Table 2: Correlation between the emotional eating behaviour of staff workers in UMS and their stress levels.

		Eating Behaviour	Stress Level
Spearman's rho	Eating Behaviour	Correlation Coefficient	1.000
		Sig. (2-tailed)	.284**
		N	343
	Stress Level	Correlation Coefficient	1.000
		Sig. (2-tailed)	<.001
		N	343

** . Correlation is significant at the 0.01 level (2-tailed).

The observed relationship is supported by previous literature on emotional eating. Van Strien (2018) suggests that previous studies have identified various factors that contribute to emotional eating, such as using food to manage stress and depression, or misinterpreting emotional cues as physical hunger or fullness. A person may get an instant sense of satisfaction from eating appetising meals because of emotional eating (Garaulet *et al.*, 2012). However, due to its unlikely ability to produce long-term improvements in mood, it is often a maladaptive emotional control method, which is a coping strategy that temporarily relieves negative emotions but ultimately worsens the situation or causes harm. As previously mentioned, this leads to an excessive dietary intake of foods that are low in nutrients and the consequent emergence of negative emotions, such as guilt (Van, 2018).

Further evidence from experimental studies highlights the relationship between stress and food consumption. Following laboratory exposure to ego threats involves a controlled experimental setting where participants are subjected to situations designed to challenge their self-esteem, self-worth, or

personal competence. These situations create stress or negative emotions, simulating real-life experiences where individuals feel criticised, judged, or inadequate. From this experiment, it is seen that people with higher negative emotions or increased cortisol response tend to consume more foods that are high in sugar and fat (Rutters *et al.*, 2009). Similarly, in naturalistic settings, people with higher cortisol reactivity report eating more snacks as a reaction to daily stress (Newman *et al.*, 2007). Cortisol is a hormone produced by the adrenal glands in response to stress; hence, higher cortisol level means higher stress levels, resulting in cravings for high-fat and high-sugar foods as a coping mechanism. This relates to my findings as stress often leads to emotional eating behaviour. While the relationship identified in this study is weak, it highlights the potential for stress to act as a driver for unhealthy eating behaviours in specific contexts, such as the workplace.

3.4 The Association Between the Education Level of Staff Workers at University Malaysia Sabah and Their Knowledge of Healthy Eating

The third objective in this study was to assess the association between the education level of staff workers at University Malaysia Sabah and their knowledge of healthy eating. There were 9 multiple-choice questions to test the knowledge level of the respondents on healthy eating. The type of analysis used to fulfil this objective was the Chi-Square test, where the Chi-Square value. (χ^2) and the p-value were taken into account.

Table 3 shows the Chi-square statistics and its significant value. The Chi-square statistic ($\chi^2 = 243.169$, $df = 8$, $p < .001$) indicates a significant association between education level and nutrition knowledge among staff workers at UMS. Table 3 also presents other test statistics, such as the Likelihood Ratio, which may be used in place of the Chi-square test if the sample size were small.

Table 3: Chi-Square results of the association between the educational level of staff workers in UMS and their knowledge of healthy eating.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	243.169 ^a	8	<.001
Likelihood Ratio	220.831	8	<.001
Linear-By-Linear Association	102.753	1	<.001
N of Valid Cases	343		

a. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 1.96.

This result shows that higher education is correlated with higher levels of nutrition knowledge. These findings reinforce education as a key social determinant of dietary literacy, aligning with evidence from Malaysian community data and hospital staff surveys (Mo *et al.*, 2024). Similarly, dietary surveys conducted in Sepang and Muar reported that adults with tertiary education had nearly twice the odds of possessing adequate nutrition knowledge compared with those who had only completed secondary schooling (Ahmad *et al.*, 2025). Likewise, a cross-sectional study of 1,212 tertiary-hospital staff in China reported that holding a master's degree or higher doubled the likelihood of high nutrition literacy (Mo *et al.*, 2024). A recent scoping review covering 72 university-based studies published between 2019 and 2024 confirmed education level as the most consistent predictor of nutrition knowledge worldwide (Lim *et al.*, 2025). Collectively, this evidence suggests UMS nutrition-promotion initiatives should priorities staff with diploma-level or lower qualifications, using plain-language resources and hands-on demonstrations to bridge knowledge gaps.

In Contrast, research by Nishinakagawa (2023) revealed that individuals with lower levels of education, regardless of the age group, were more likely to skip breakfast compared to those with higher educational attainment. This relates to the findings suggesting that lower education levels may contribute to unhealthy dietary habits, such as skipping important meals due to limited nutrition knowledge. Another finding indicates that the link between lower education levels and frequent breakfast skipping could stem from limited knowledge and fewer educational opportunities related to healthy eating habits, which are less accessible to individuals with lower educational backgrounds (De Vriendt *et al.*, 2009). This aligns with other studies suggesting that inadequate nutrition knowledge may contribute to skipping breakfast (Matsumoto *et al.*, 2019), further reinforcing the connection between lower education levels and the tendency to skip breakfast.

Past studies, primarily conducted in the United States, have shown that adults with lower levels of education tend to have poorer dietary habits (Rehm *et al.*, 2016). Moreover, Rehm *et al.*, observed that over the past decade, disparities in diet quality based on income and education have expanded. Education plays an important part in providing individuals with the necessary skills to obtain and understand food-related information. Additionally, according to the social diffusion theory, those with higher educational attainment are more likely to adopt new innovations earlier than individuals with lower education levels (Worsley *et al.*, 2004).

4. Conclusion

In summary, this study identified perceived workplace barriers to healthy eating, the correlation between stress levels and emotional eating behaviour, and the association between education level and knowledge on healthy eating among staff workers at University Malaysia Sabah (UMS). The findings highlight several key workplace barriers that hinder healthy eating habits. Time constraints due to work commitments, a lack of healthy food options in the workplace, and inadequate food storage or preparation facilities emerged as the most significant barriers. While price and accessibility to healthy food stores were found to be minor concerns, the unavailability of healthier meal options at work remains a primary challenge. It is suggested that improving workplace food environments, such as providing healthier food choices and better storage facilities, could encourage better eating habits among UMS staff. Additionally, the study identified a weak but statistically significant positive correlation between stress levels and emotional eating behaviour. As stress increases, employees may exhibit slightly higher tendencies toward emotional eating. This finding aligns with existing literature on stress-induced eating and emphasises the need for stress management strategies and workplace wellness programmes to mitigate emotional eating and promote healthier eating behaviours. Finally, the study revealed a significant association between education level and knowledge of healthy eating. Staff members with higher education levels demonstrated greater nutritional knowledge, reinforcing the role of education in promoting healthier eating behaviours. This finding highlights the importance of implementing nutrition education initiatives targeted at employees with lower educational backgrounds to help bridge the knowledge gap. By addressing these key barriers and promoting targeted interventions, institutions like UMS can play a vital role in fostering healthier workplace cultures and improving the long-term well-being of their staff.

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