ORIGINAL ARTICLE

Chronotype and Its Association With Body Mass Index and Binge Eating Behaviour among Undergraduate Students

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ABSTRACT

Background: Chronotype, or an individual's preference for morning or evening activities, has a significant impact on their sleep-wake patterns. According to recent studies, chronotype may influence eating habits and body mass index (BMI), among other aspects of health. The purpose of this study is to look into the relationship between chronotypes and body mass index (BMI) and binge eating behaviour in undergraduate students. **Methods:** The cross-sectional study included 166 undergraduate students from USM Health Campus, with 86.1% females and a mean age of 21.1 ± 1.4 years. The Morningness-Eveningness Questionnaire (MEQ) and the 7-Item Binge-Eating Disorder Screener (BEDS-7) were used to assess chronotype and binge eating behaviour respectively. Meanwhile, BMI was calculated by measuring weight and height. **Results:** The chronotype distribution among university students indicated that 16.3% were categorised as morning types, 68.0% as intermediate types, and 15.7% as evening types. The mean chronotype score was 20.26 ± 8.37, signifying a moderate general preference with considerable individual variability. Binge eating behaviours are prevalent in 22.3% of university students, with a mean score of 3.04 ± 3.00. According to the updated CPG Obesity guidelines, the proportion of overweight and obese students increased from 21.7% to 31.3%. **Conclusion:** The chronotypes observed did not show any associations between binge eating behaviour (p=0.431) and BMI (p=0.422). More research is needed to shed light on the relationships between chronotype, BMI, and binge eating behaviour, as well as to identify other factors that may have a greater influence on BMI among university students. These results have the potential to influence the development of future student wellness programmes by emphasising the importance of broader lifestyle and psychological factors that extend beyond chronotype. The cross-sectional design of this study is a limitation, as it precludes the inference of causal relationships.

INTRODUCTION

Circadian rhythms vary among individuals and can be classified into three types based on their preferences: morning-type (M-type), evening-type (E-type), and intermediate-type (I-type), collectively known as chronotypes (Horne & Ostberg, 1976). Studies indicate that variations in chronotypes affect multiple physiological processes, including the immune system and the hypothalamus-pituitary-adrenal (HPA) axis (de Punder et al., 2019).

Furthermore, research has identified a correlation between chronotype and body mass index (BMI) (Sun et al., 2020), in addition to binge eating behaviour (Harb et al., 2012). Given that both BMI and dietary habits are essential indicators of metabolic health, understanding the influence of chronotype on these factors is crucial. Chronotype may affect health via behavioural and metabolic mechanisms; for example, evening chronotypes have been associated with unhealthy eating patterns such as nocturnal eating and binge eating, in addition to omitting breakfast, factors that may contribute to elevated BMI (Yang et al., 2023). Furthermore, individuals exhibiting binge eating behaviour are often found to possess a heightened BMI (Thu et al., 2019).

Prior research indicates a correlation between chronotypes and binge eating behaviour, with individuals of evening chronotypes exhibiting a higher propensity for binge eating compared to those of morning chronotypes (Harb et al., 2012). Binge eating behaviour is intricately linked to obesity and eating disorders. Binge Eating Disorder (BED) is an eating disorder marked by recurrent binge eating episodes, during which individuals experience a loss of control and considerable distress over their eating behaviours.

According to Halmi (2020), BED is the most prevalent eating disorder, with a lifetime prevalence of 3.5% in women and 2.0% in men in the United States. In contrast to other eating disorders, binge eating episodes in BED are

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not accompanied by purging, excessive exercise, or fasting, leading to a heightened risk of overweight or obesity in those affected. Given that evening chronotypes correlate with elevated BMI and a heightened propensity for binge eating episodes (Ekiz Erim & Sert, 2023), it is essential to investigate their impact on metabolic health.

BED can also occur in the late teens or early twenties (Kessler et al., 2013). In a population-based study, Udo and Grilo (2018) discovered that the median age of onset of BED was 21 years. Many young people in Malaysia fall into this age range because they are usually university students, a group that may be especially vulnerable to developing BED due to the stress associated with entering adulthood and the responsibilities that come with it (Pedrelli et al., 2015). This transitional phase is frequently characterised by erratic sleep patterns, poor dietary habits, and increased psychological stress, all of which may influence alterations in chronotype, BMI, and eating behaviours. Nonetheless, the literature reveals a limited comprehension of the prevalence of BED in this population.

The incidence of overweight and obesity among university students in Malaysia remains elevated. At Universiti Putra Malaysia, 19.6% of undergraduates were identified as overweight and 6.3% as obese (Suhaimi et al., 2020). In a public university, the prevalence of overweight and obesity among postgraduate students was 32.0%, comprising 23.1% overweight and 8.9% obese (Kabir et al., 2014). This is concerning due to the potential for unhealthy eating habits and irregular sleep patterns to persist into later life, which were established during early adulthood. A recent study involving Malaysian university students identified correlations between poor sleep quality, evening chronotypes, and postponed mealtimes with heightened appetite and alterations in body composition (Say et al., 2025). Chronotype and chrononutrition significantly influence dietary habits and metabolic results. Research indicates that university students possessing an evening chronotype exhibit a preference for high-calorie foods (Feng et al., 2022). Likewise, in Malaysian young adults, a morning chronotype and healthier sleep patterns correlated with reduced BMI, waist circumference, and visceral fat, whereas evening chronotypes exhibited significantly elevated adiposity (Cheong et al., 2024). Building on this evidence, a substantial study involving Malaysian women (n = 934) revealed that detrimental chrononutrition behaviours, such as skipping breakfast, eating late in the evening, and consuming the largest meal at night, were significantly associated with abnormal BMI and compromised sleep quality, underscoring the influence of meal timing on weight management and sleep health (Teh et al., 2023). Comprehending the correlation between chronotype, BMI, and binge eating behaviour within this demographic can facilitate the development of culturally relevant campus initiatives, including chronotype-oriented counselling, sleep hygiene programmes, and obesity prevention strategies for students who are at risk.

Recent research has focused on the link between chronotypes and health outcomes, particularly dietary intake and metabolic indicators. Nonetheless, little research has been conducted on the impact of chronotypes on BMI and binge eating behaviours in young adults. Recognising that dietary habits and lifestyle choices formed during university frequently last into adulthood is critical for developing preventive health strategies. As a result, the purpose of this study is to look into the relationship between chronotypes and BMI among undergraduate students, as well as their relationship with binge eating behaviour. It is hypothesised that individuals possessing an evening chronotype will exhibit a higher BMI and an increased propensity for binge eating behaviour in comparison to those with morning or intermediate chronotypes. This research question was developed to elucidate the impact of chronotype on health-related behaviours and metabolic outcomes within a Malaysian university student demographic, thereby guiding the formulation of early, targeted preventive interventions

MATERIALS AND METHODS

This study utilises a cross-sectional design. The data collection took place from October 2023 to December 2023. This study was conducted with undergraduate students from the School of Medical Sciences, School of Dental Sciences, and School of Health Sciences at Universiti Sains Malaysia, Kubang Kerian, Kelantan. The inclusion criteria specified participants aged 18 to 25 years who are undergraduate students enrolled in the School of Medical Sciences, School of Dental Sciences, or School of Health Sciences.

The exclusion criteria included the presence of medical conditions (e.g., hypertension, hyperlipidaemia, depression, asthma, arthritis) or a diagnosis of any psychiatric disorder. The choice of undergraduate students is supported by a population-based study by Udo & Grilo (2018), which determined that the median age of onset for binge eating disorder (BED) is 21 years. This age aligns with that of numerous young adults in Malaysia, as the majority are enrolled in university. During this transitional phase into adulthood, individuals may be especially susceptible to developing BED due to the heightened stress linked to new responsibilities (Pedrelli et al., 2015).

This study required 166 participants, calculated using Daniel's formula (Daniel, 1999) (n=sample size, Z= z statistic for a level of confidence at 95%, the Z-score value for the 95% confidence level is 1.96).

$$n = \frac{Z^2\ P\ (1-P)}{d^2} \quad (1)$$

According to a study conducted among university students in Malaysia, 10% of the participants exhibited binge eating behaviour (Thu et al., 2019). The anticipated proportion of the population is 0.10. For the study, a 20% attrition rate is included in the calculation. The USM Human Research Ethics Committee approved this study (Reference Code: USM/JEPeM/KK/23060455) as well as the Deans of the School of Medical Sciences, School of Dental Sciences, and School of Health Sciences.

Data Collection Method

The data collection began immediately following ethical approval. Individuals eligible for this study received the subject recruitment poster via social media platforms. This poster was distributed in conjunction with the recruitment message to recruit eligible participants for the ongoing study. The recruitment message for this study was distributed to class representatives from various courses at the Universiti Sains Malaysia (USM) Health Campus.

Participants who met the inclusion and exclusion criteria for this investigation were invited to participate. The data was collected using Google Forms, as undergraduate students were accustomed to completing online questionnaires. Nevertheless, the researcher conducts physical anthropometric measurements. During the data collection period, the researcher initially supplied the study participant with a Google Form link that contained the Participant Information Sheet, Material Publication Consent Form, and questionnaires accessible via a QR code or link. The researcher conducted the anthropometric measurements of participants immediately after obtaining their consent to participate.

Anthropometric weight measurements were taken using a high-capacity digital flat scale (SECA 813), which was calibrated to zero before use. The respondents stood barefoot and placed their hands on the scale in a relaxed position. The participants were positioned upright, with their heels aligned and their gaze directed forward, and their height was measured using a portable stadiometer (SECA 213). Two measurements of weight and height were obtained and documented, and the mean value was used to calculate BMI. The BMI was subsequently categorised in accordance with the WHO classification and the Clinical Practice Guidelines (CPG) for the Management of Obesity (CPG Obesity, 2023). The data collection process lasted two months, yielding a total of 166 responses. The data from the initial 166 respondents were subsequently analysed. The final sample contained a higher proportion of female participants as a result of the online recruitment strategy and the voluntary nature of sampling. This gender imbalance is recognised as a limitation of the study and is addressed accordingly. Convenience sampling was implemented as a result of the academic semester's time and logistical constraints. Although probability sampling has the potential to improve generalisability, the current methodology was selected to guarantee the timely collection of data.

Research Tools

The questionnaire, which has four sections and 36 questions, was created using Google Forms. Each section contains a variety of questions, with respondents required to answer all questions in Sections A, B, and D, while the researcher completed Section C. This section utilised the Morningness–Eveningness Questionnaire (MEQ) and the 7-item Binge Eating Disorder Screener-7 (BEDS-7). Both questionnaires are accessible online free of charge, and permission was obtained from the original authors before their utilisation in this study.

Section A: Socio-Demographic Data

This section gathers data pertaining to individuals' personal information and socio-demographic attributes, including age, gender, ethnicity, educational institution, year of study, and socioeconomic status. The collected data were excluded from the statistical analysis due to their status as confounding factors. Future studies should examine the impact of these socio-demographic variables on the correlation between chronotype, BMI, and binge eating behaviour.

Section B: Morningness–Eveningness Questionnaire (MEQ)

The Morningness–Eveningness Questionnaire (MEQ) is employed as a tool in Section B to investigate chronotype (Horne & Ostberg, 1976). An authorisation was obtained from the original author of the MEQ for its use in this study. A student demographic aged 18 to 32 years was initially employed and validated for MEQ. Cavallera and Boari (2015) have shown that the New Zealand version exhibits a high degree of internal consistency (Cronbach α coefficient=0.83). The questionnaire consists of 19 multiple-choice questions that are intended to collect data from respondents by evaluating their morningness and

eveningness preferences through self-reported responses.

In this section, participants were asked to specify their preferred times for waking up or falling asleep, rather than their actual times. Each multiple-choice response is assigned a numerical score between 0 and 6 points. The cumulative scores differ between 16 and 86. Horne and Ostberg (1976) classified participants as either evening type (scores between 16 and 41), neither type (scores between 42 and 58), or morning type (scores between 59 and 86).

Section C: Body Mass Index (BMI)

Section C seeks to collect information on respondents' weight and height in order to compute their Body Mass Index (BMI). This section has been finalised by the researcher. The researcher measured respondents' weight and height twice in the Highly Integrated Learning and Living Space (The HILLS) at the USM Health Campus, utilising a high-capacity digital flat scale (SECA 813) and a portable stadiometer (SECA 213), respectively. The BMI is determined by dividing weight in kilogrammes by the square of height in meters and is categorised according to the World Health Organisation (WHO) classification and Clinical Practice Guidelines (CPG) for the Management of Obesity (CPG Obesity, 2023).

Section D: 7- item Binge Eating Disorder Screener-7 (BEDS-7)

The Binge Eating Disorder Screener-7 (BEDS-7) is employed in Section D to evaluate binge eating behaviour (Herman et al., 2016). The original authors of the BEDS-7 granted permission for its use in this investigation. BEDS-7 is a screening tool that was created by Takeda with the objective of identifying adults who are suspected of having binge eating disorder (BED). Alhaj et al. (2022) have reported that the results of the study yield a Cohen's Kappa value of 0.827, with a sensitivity of 100% and a specificity of 38.7%.

This questionnaire comprises seven questions. Abdulla et al. (2023) included a 4-point combined severity/frequency scale in each question to project the degree to which the participants had encountered each item of the BEDS-7 within the past 3 months. The scale options included 0 (never or rarely), 1 (sometimes), 2 (often), and 3 (always). The cumulative score for each individual is derived by summing the scores from the BEDS-7. Individuals with a total score below 5 are considered to have normal eating habits, while those with a score of 5 or higher exhibit symptoms of binge eating (Abdulla et al., 2023).

Statistical Analysis

The Statistical Package for Social Sciences (SPSS) version 28.0 was used to enter and analyse the data. Descriptive statistics are used to summarise the socio-demographic characteristics of participants, including their age, gender, ethnicity, school of study, and year of study. Numerical data are represented as the mean (SD) or median (IQR) according to their normal distribution. Conversely, categorical data is represented as frequency (percentage).

Normality assessments, including the Shapiro-Wilk test, were used to ascertain the normal distribution of the data. The relationship between chronotype, body mass index, and binge eating behaviour among USM undergraduate students was tested using Pearson's Chi-Square test if expected count < 5 is less than 20% of the cells, or Fisher's Exact test if expected count < 5 more than > 20% of the cells. The significance level (α) was set to 0.05.

RESULTS

Characteristics of participants

The sociodemographic characteristics of the sample are summarised in Table 1. The mean age and mean BMI of the study were determined. The study had 166 participants, with a mean age of 21.1±1.4 years. Malays comprised the majority of the population (62%), followed by Chinese (25.9%), Indians (5.4%), and Others (6.6%) following in that order.

Females constituted 86.1% of the population. Regarding education, the majority of participants (84.9%) were affiliated with the School of Health Sciences, and 33.7% were fourth-year students. According to the Household Income & Basic Amenities Survey Report 2019 (2020), 92 participants (55.4%) were classified as B40, which means they had a monthly household income of RM4850 or less. Table 1 details the participants' characteristics.

Chronotype, BMI and BED

Table 2 provided an overview of the chronotype distribution among university students. There were 16.3% morning types, 68.0% intermediate types, and 15.7% evening types. The sample had a BMI of 22.1 (SD = 4.57) kg/m², and about 62% of the people in the study had a BMI between 18.5 and 24.9 kg/m², which is considered normal. According to the World Health Organisation (2000), 16.3% of the participants were considered underweight, while 21.7% were considered overweight or obese.

According to the new Clinical Practice Guidelines (CPG) for

obesity management, the prevalence of overweight and obese individuals rose to 31.3%, while the prevalence of individuals with normal weight declined to 52.4% (CPG Obesity, 2023). Table 2 shows that 22.3% of all participants engaged in positive binge eating behaviour (score ≥ 5 on the BEDS-7). The mean BEDS-7 score for the entire sample was 3.04 SD 3.00.

Association between Chronotype with BMI and BED

According to Table 3, there is no significant link between chronotype and Binge Eating Disorder (BED) ($p>0.05$). Furthermore, there was no significant correlation between chronotype and body mass index (BMI) ($p> 0.05$).

Table 1: Characteristics of participants (n=166)

Characteristics	n	%
Age (years), mean ± S.D.	21.1 ± 1.4	
Gender		
Female	143	86.1
Male	23	13.9
Ethnicity		
Malay	103	62.0
Chinese	43	25.9
Indian	9	5.4
Others	11	6.6
School of study		
Health Sciences	141	84.9
Medical Sciences	15	9.0
Dental Sciences	10	6.0
Year of study		
Year 1	37	22.3
Year 2	41	24.7
Year 3	32	19.3
Year 4	56	33.7
Year 5	0	0.0
Socioeconomic status		
B40	92	55.4
M40	64	38.6
T20	10	6.0

* B40: monthly household income ≤RM4850; M40: monthly household income between RM4850- RM10970; T20: monthly household income ≥RM10971

Table 2: Distribution of chronotype, BMI and binge eating behaviour among university students (n = 166)

	n	%
Morningness-eveningness questionnaire (MEQ), mean ± S.D.	20.26 ± 8.37	
Morning type	27	16.3
Intermediate type	113	68.0
Evening type	26	15.7
Body Mass Index (kg/m^2), mean ± S.D.	22.10 ± 4.57	
WHO Classification		
Underweight	27	16.3
Normal	103	62.0
Overweight	25	15.1
Obese	11	6.6
CPG for the Management of Obesity Classification		
Underweight	27	16.3
Normal	87	52.4
Overweight	32	19.3
Obese	20	12.0
Binge Eating Disorder Screener-7 (BEDS-7), mean ± S.D.	3.04 ± 3.00	
Absent	129	77.7
Present	37	22.3

Table 3: Association between chronotype with BMI and binge eating behaviour (n=166)

Variable	Chronotype (n = 166), n (%)			*p* value
	Morning type	Intermediate type	Evening type	
Binge Eating Disorder Screener-7				
Absent	19 (14.7)	91 (70.5)	19 (14.7)	0.431[a]
Present	8 (21.6)	22 (59.5)	7 (18.9)	
Body Mass Index				
Underweight	5 (18.5)	17 (63.0)	5 (18.5)	0.422 [b]
Normal	19 (18.4)	71 (68.9)	13 (12.6)	
Overweight and obese	3 (8.3)	25 (69.4)	8 (22.2)	

[a] *Tested using Pearson's Chi Square*

[b] *Tested using Fisher's exact test*

DISCUSSION

In this study, 68.0% of the participants classified as intermediate type, 16.3% as morning type, and 15.7% as evening type. Similarly, Rique et al. (2014) found that among medical students at a university in Brazil, 51.6% were classified as intermediate type, 27.6% as morning type, and 20.8% as evening type. Sun et al. (2020) conducted research among participants in the Bogalusa Heart Study, revealing that 42.2% were identified as morning type, 11.1% as evening type, and the remainder as intermediate type.

Most people have intermediate chronotypes, which means that their sleep-wake cycles are in sync with daylight. A smaller number of people, on the other hand, are extreme early or late risers. Chronotypes, also called diurnal preferences, are biological processes that are controlled by the circadian rhythm (Kalmbach et al., 2017). These preferences are influenced by intrinsic circadian variations (Papatsimpa et al., 2021). Extended circadian periods correspond to later chronotypes, whereas shorter periods correspond to earlier chronotypes.

Lack et al. (2009) discovered that intrinsic periods vary from 24.1 hours for morning types to 24.3 hours for evening types. Czeisler et al. (1999) and Duffy et al. (2001) documented an average human circadian cycle of 24.2 hours. This interval (24.1–24.3 hours) may elucidate the prevalence of intermediate chronotypes. Circadian systems inherently vary among populations, affecting diverse sleep preferences (Fischer et al., 2017). The median BMI, as per WHO criteria, was 22.1 ± 4.57 kg/m², falling within the normal range (World Health Organisation, 2000). The proportions we obtained align with certain prior research, though not universally. Our results aligned with the findings of Omar & Kudin (2023). While similar findings were reported by Kutty et al. (2015) and Wan Zakaria et al. (2021), our study found a higher prevalence of overweight and obesity (21.7%) than the study involving University Tunku Abdul Rahman (UTAR) students (13.2%), but a lower prevalence compared to students from UiTM Kelantan (34.8%) (Kutty et al., 2015; Wan Zakaria et al., 2021).

Although results indicate variability in BMI distributions among university students, the prevalence rose to 31.3% when assessed according to the new Clinical Practice Guidelines (CPG) for the Management of Obesity, underscoring the critical need for the development of strategies at the university level to effectively prevent and manage obesity (CPG Obesity, 2023). Consequently, effective intervention programmes, including sleep education and physical activity-based interventions, should be implemented to address overweight and obesity among university students (Lubas & Szklo-Coxe, 2019; Pfisterer et al., 2022).

According to the current study, 22.3% of university students binge eating behaviour. The prevalence was higher than that of previous research conducted on college and university students. In a study of 3,415 college students, 2.4% were found to have binge eating disorder (BED), compared to 10% in a sample of Malaysian university students (Solly et al., 2023; Thu et al., 2019). The heightened prevalence identified in this study may be attributed to the diverse instruments used to assess binge eating behaviour. This study utilises the 7-Item Binge-Eating Disorder Screener (BEDS-7) to assess Binge-Eating Disorder (BED).

In contrast, Solly et al. (2023) assessed BED using the self-reported Minnesota Impulse Control Disorders Interview (MIDI), while Thu et al. (2019) implemented the Binge Eating Scale (BES) questionnaire. Binge eating behaviour was identified in 21.2% of participants in a prior study by Abdulla et al. (2023), which employed the same assessment method as the current investigation. Consequently, the comparison of binge eating behaviour prevalence among study populations should rely on

studies employing identical assessment methodologies.

This is the first study in Malaysia to employ the BEDS-7 screening tool to identify individuals with binge eating behaviour, and to the best of our knowledge, it is the only available screening tool that is specifically designed for BED. BEDS-7 not only preserves the content of the DSM-5 criteria, but also provides a reasonable specificity of 38.7% and a maximal sensitivity of 100% (Herman et al., 2017). As a result, the BEDS-7 may be useful in helping medical professionals identify patients with BED.

Research on the relationship between chronotype and obesity yields conflicting results. Although some claim that eveningness is associated with a higher body mass index (BMI), the current study found no significant correlation between chronotype and BMI ($p>0.05$). This is consistent with a recent review which found no evidence linking chronotype to an increased risk of obesity (Kivelä et al., 2018). Walker et al. (2015) and Maukonen et al. (2016) found that chronotype does not appear to be a risk factor for obesity. Likewise, Harb et al. (2012) identified no correlation between the MEQ and BMI, contradicting earlier studies that indicated a relationship between morningness and a lower BMI. This result, despite its non-significance, motivates additional investigation into other moderating variables (e.g., stress, sleep duration, physical activity) that may impact the relationship between chronotype and BMIs.

The correlation between daily energy expenditure and body mass suggests that an increase in body mass is correlated with an increase in energy intake (Swinburn et al., 2009). Sato-Mito, Shibata, et al. (2011) conducted a study that revealed a lack of correlation between the chronotype score and daily energy intake, as well as no significant association between BMI and MEQ scores. Additionally, research has demonstrated that individuals with an evening chronotype exhibit unfavourable dietary habits and poorer health behaviours than those with a morning chronotype (Kanerva et al., 2012; Maukonen et al., 2016). Moreover, unhealthy dietary and lifestyle choices among Malaysian adults are recognised as factors contributing to their elevated global obesity rate. As a result, we hypothesised that poor dietary choices, which could or might not be influenced by an individual's chronotype, had an impact on BMI.

Prior studies have demonstrated a correlation between chronotype and eating disorders (Kandeğer et al., 2021; Romo-Nava et al., 2020). Individuals with an evening chronotype are often linked to bulimic and binge eating behaviours (Kivelä et al., 2018). Binge Eating Disorder (BED) is an eating disorder defined by recurrent episodes of binge eating, during which individuals experience a loss of control and significant distress regarding their eating behaviour (Iqbal & Rehman, 2022). Vera et al. discovered that evening chronotypes had significantly higher eating behaviour scores, as measured by the Three-Factor Eating Questionnaire (TFEQ), than morning chronotypes, implying decreased dietary control and an increase in stress-related eating incidents. Research suggests that individuals who engage in binge eating behaviours are more likely to identify with an evening chronotype (Harb et al., 2012; Romo-Nava et al., 2020). However, the present study revealed no correlation between chronotype and binge eating behaviours. This discrepancy may arise from the distinct assessment tool employed in the current study to identify binge eating behaviour, in contrast to previous studies that utilised various instruments such as the Eating Disorder Diagnostic Scale (EDDS), Three-Factor Eating Questionnaire (TFEQ), and Binge Eating Scale (BES) (Harb et al., 2012; Romo-Nava et al., 2020; Vera et al., 2018). This non-significant discovery underscores the significance of consistent research tools in the study of eating behaviour and chronotype, and it implies that assessment variability may influence the results.

Currently, evidence connecting an individual's chronotype to particular eating disorders remains scarce. A recent review indicated that dietary behaviours such as food addiction, hunger, eating duration, television viewing during meals, binge eating, and meal skipping were assessed only superficially; thus, further research is required to explore the relationship between chronotype and these eating habits (Mazri et al., 2019).

Several limitations should be taken into account in this study. First and foremost, the cross-sectional design restricts the capacity to infer causality between chronotype, BMI, and binge eating behaviour. Secondly, the employment of convenience sampling and the disproportionate representation of female participants may introduce selection bias, potentially impacting the generalisability of the results. Furthermore, self-reported data from instruments like the MEQ and BEDS-7 may be susceptible to response bias or underreporting. The study was confined to students from health-related faculties at a single university, potentially failing to represent the wider university student demographic in Malaysia. Subsequent research should prioritise random sampling, gender equity, and the inclusion of varied academic backgrounds to enhance representativeness and validity.

CONCLUSION

This research found no significant link between

chronotype and body mass index (BMI) or binge eating behaviour among public university students in Kelantan, Malaysia. The findings suggest that chronotype may not have a significant impact on BMI or binge eating; however, more research is needed to investigate other possible causes. The study found that regardless of the classification method used, the majority of students had a BMI within the normative range.

Nonetheless, the implementation of the new Clinical Practice Guidelines (CPG) for obesity management increased the proportion of overweight and obese students from 21.7% to 31.3%. Furthermore, 22.3% of students demonstrated signs of binge eating behaviour, emphasising the importance of initiatives aimed at assisting students in recognising and addressing these behaviours while maintaining a healthy BMI.

Even though chronotype did not play a significant role in this investigation, the substantial prevalence of binge eating and overweight status indicates the necessity of campus-based interventions that concentrate on mental health, nutrition education, and lifestyle modification.

Future research should concentrate on a more representative sample of students from all USM campuses to enhance the understanding of obesity and binge eating prevalence among Malaysian undergraduates. Simple random sampling would enhance the reliability and generalisability of the results. In addition, future research should take into account the inclusion of mediating variables, such as stress levels, sleep quality, and lifestyle behaviours, to gain a more comprehensive understanding of their indirect effects on the relationship among chronotype, BMI, and binge eating behaviour. Furthermore, future research may examine additional variables, such as lifestyle habits, dietary patterns, and psychological factors, that could demonstrate a more significant correlation with BMI and binge eating behaviour.

This research is one of the initial investigations in Malaysia examining the correlation between chronotype, BMI, and binge eating behaviour utilising the BEDS-7 screening instrument. The findings provide initial insights into a locally under-explored domain and may establish a basis for future longitudinal and behavioural studies focused on the early prevention of disordered eating among university students.

In conclusion, this investigation underscores the significance of early screening and preventive strategies in promoting student wellness, even when conventional predictors such as chronotype fail to demonstrate a robust correlation.

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CONFLICT OF INTEREST

The authors did not have a conflict of interest to declare.

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