Evaluation of the Effects of Night Eating Syndrome and Mindful Eating on Sleep Quality Among Female Students in the Faculty of Health Sciences

Sağlık Bilimleri Fakültesi'nde Okuyan Kız Öğrencilerde Gece Yeme Sendromu ve Yeme Farkındalığı Davranışının Uyku Kalitesi Üzerine Etkilerinin Değerlendirilmesi

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ABSTRACT

Poor sleep quality is prevalent among university students and has been linked to unhealthy eating behaviors, including night eating and low mindful eating, which may negatively impact overall health and well-being. The purpose of this study is to evaluate the effects of mindful eating and night eating syndrome on sleep quality among female students in the Faculty of Health Sciences.

This cross-sectional study was conducted with a total of 360 female university students aged 18 to 24 years. Data were collected through face-to-face surveys, and the Mindful Eating Questionnaire (MEQ), Night Eating Questionnaire (NEQ), and Pittsburgh Sleep Quality Index (PSQI) were administered.

Among the participants, 40.8% were classified as good sleepers, while 59.2% were poor sleepers. Additionally, MEQscores were not statistically different between the two groups ($p > 0.05$), while NEQ total scores were significantly higher in participants with poor sleep quality ($p = 0.003$). As a result of the regression analysis, higher total PSQI scores were significantly associated with skipping meals (Beta = 0.101), alcohol consumption (Beta = 0.163), high Body Mass Index (BMI) (Beta = 0.610), and NEQ score (Beta = 0.084).

In conclusion, poor sleep quality among female university students is significantly associated with night eating behaviors, higher BMI, meal skipping, and alcohol consumption, highlighting the need for nutritional and behavioral intervention Stargeting these behaviors to improve sleep quality and overall well-being.

Keywords: Sleep quality, Night eating syndrome, Mindful eating, Health science faculty students

ÖZ

Üniversite öğrencileri arasında düşük uyku kalitesi yaygındır ve gece yeme ile düşük yeme farkındalığı gibi sağlıksız yeme davranışlarıyla ilişkilendirilmiştir, bu durum genel sağlık ve iyi olma halini olumsuz etkileyebilir. Bu çalışmanın amacı, Sağlık Bilimleri Fakültesi'nde okuyan kız öğrencilerin yeme farkındalığının ve gece yeme sendromunun uyku kalitesi üzerindeki etkilerini değerlendirmektir.

Bu kesitsel çalışma, 18-24 yaşlarında 360 üniversite öğrencisiyle yürütülmüştür. Veriler yüz yüze anketlerle toplanmış olup, Yeme Farkındalığı Ölçeği (MEQ), Gece Yeme Ölçeği (NEQ) ve Pittsburgh Uyku Kalitesi İndeksi (PSQI) uygulanmıştır.

Katılımcıların %40,8'inin uyku kalitesi iyi, %59,2'si ise kötü olarak sınıflandırılmıştır. Ayrıca, MEQ skorları iki grup arasında istatistiksel olarak anlamlı bir fark göstermemiştir ($p > 0,05$), ancak NEQ skorları, düşük uyku kalitesine sahip katılımcılarda anlamlı derecede yüksek bulunmuştur ($p = 0,003$). Regresyon analiz sonucunda, daha yüksek PSQI skorları, öğün atlama (Beta = 0,101), alkol tüketimi (Beta = 0,163), yüksek BKİ (Beden Kitle İndeksi) (Beta = 0,610) ve NEQ skoru (Beta = 0,084) ile anlamlı şekilde ilişkilendirilmiştir.

Sonuç olarak, kız üniversite öğrencileri arasında düşük uyku kalitesi, gece yeme davranışları, yüksek BKİ, öğün atlama ve alkol tüketimi ile anlamlı bir şekilde ilişkilidir. Bu davranışlara yönelik beslenme ve davranışsal müdahaleler uyku kalitesini ve genel iyi olma halini iyileştirmek için gerekli olduğu vurgulanmaktadır.

Anahtar Kelimeler: Uyku kalitesi, Gece yeme sendromu, Yeme farkındalığı, Sağlık bilimleri fakültesi öğrencileri

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INTRODUCTION

Sleep quality, defined by factors such as sleep onset, sleep duration maintenance, post-awakening refreshment, and overall satisfaction, has garnered attention for its impact on key health indicators in young individuals.[1] It is one of the fundamental elements influencing general health and quality of life, and inadequate sleep has been linked to an increased risk of various chronic diseases.[2, 3]

As future healthcare professionals, students of health sciences are expected to raise awareness among their patients about maintaining healthy nutrition and improving sleep quality.[4] However, due to their demanding academic schedules and high stress levels, these students may experience significant changes in their eating and sleeping habits.[5-7]

University students are particularly at high risk of negative consequences due to poor dietary habits.[1, 8] These habits include consuming heavy dinners, late-night snacking, skipping breakfast, replacing meals with snacks, and irregular meal timings. [5, 9-12]

Night eating syndrome, a clinical disorder characterized by recurrent episodes of excessive eating after dinner or upon waking from sleep, negatively impacts sleep quality.[13, 14] Another factor contributing to poor sleep quality is students staying up late, often accompanied by the consumption of high-calorie foods such as pizza, chips, and ice cream, leading to weight gain.[15]

Mindful eating, which encourages individuals to focus on their physical and emotional sensations during food intake without judgment and with full attention, can aid in developing healthy eating behaviors and habits. It has been shown to reduce stress, support weight loss and control, and benefit individuals with obesity and eating behavior disorders.[16-19] However, night eating contradicts the principles of mindful eating, making it an important area for investigating the relationship between sleep quality and BMI.[13, 19, 20]

Eating habits and meal timing are significantly associated with sleep quality, and promoting healthy eating behaviors among university students may lead to improvements in sleep quality and its components.[1] As sleep quality improves, so do dietary behaviors, while poor sleep quality has been linked to night eating syndrome.[21] A longitudinal study found bidirectional relationships between night eating, loss of control over eating, and sleep quality in adolescents, suggesting that improving sleep quality and reducing the loss of control over eating may help prevent night eating.[22]

The purpose of this study is to evaluate the effects of mindful eating, night eating syndrome, and dietary habits on sleep quality among female students in the Faculty of Health Sciences.

We hypothesized that unhealthy eating patterns have a profound negative association with sleep quality among university students. Furthermore, the study aimed to examine the effect of different covariates (age, sex, nationality, living place, income, college, year, marital status, smoking status, and BMI) on the outcome of poor sleep quality.

MATERIALS AND METHOD

Study Desisgn and Sample

This cross-sectional study was conducted with a total of 360 female university student aged 18 to 24 years. Data were collected through face-to-face surveys with university students enrolled in the Faculty of Health Sciences at Amasya University. The inclusion criteria required participants to be in good health, between 18 and 24 years old, and willing to provide informed consent. Exclusion criteria included the presence of severe illnesses (such as cancer, myocardial infarction, or stroke), pregnancy, and lactation. Ethical approval for the study was obtained from the Amasya University Faculty of Health Science Non-Interventional Clinical Research Ethics Committee (Decision number 2023/155 dated 18 January 2024), and written informed consent was obtained from all participants.

Measures

The research data were collected using a questionnaire. Participants completed questionnaires assessing sociodemographic characteristics (Age, academic year and department, type of residence, alcohol and smoking habits, and eating behaviors), Mindful Eating Questionnaire, Night Eating Questionnaire, and sleep quality, measured using the Pittsburgh Sleep Quality Index (PSQI). Body weight and height were based on the participants' self-reports. The BMI, which is commonly used in practice for the assessment of obesity, was calculated using the formula [body weight (kg)/height (m^2)]. BMI results were categorized according to the World Health Organization (WHO) classification: those with a BMI below 18.5 kg/m^2 were classified as underweight, 18.5–24.9 kg/m^2 as normal weight, 25.0–29.9 kg/m^2 as overweight, and 30.0 kg/m^2 and above as obese.

The Pittsburgh Sleep Quality Index (PSQI)

The PSQI comprised 24 questions in total, with 18 of these questions organized into 7 components. Each item in the questionnaire was rated on a scale from 0 to 3 points. The cumulative score from these seven components yielded the overall scale score, which ranged from 0 to 21. A total score of 5 or higher indicated poor sleep quality, while a score below 5 indicated good sleep quality.[23, 24]

The Night Eating Questionnaire (NEQ)

The NEQ comprises 16 items developed by Allison and colleagues. All items, except for the 7th question, were scored using a five-point Likert-type scale ranging from 0 to 4. The 7th question specifically evaluated changes in mood throughout the day, giving 0 points to participants who reported no mood variations. Additionally, questions 1, 4, and 14 were scored in reverse. The total score for the NEQ varied from 0 to 52, with scores above 25 indicating a diagnosis of Night Eating Syndrome (NES), while scores below this threshold suggested that NES was not present.[25, 26]

The Mindful Eating Questionnaire

The MEQ comprising 30 questions, the scale employs a five-point Likert-type format (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always). It includes twenty reverse-scored items and consists of seven subdimensions. A score of 3 or above in any subdimension indicates that the individual possesses the trait being evaluated by that particular subdimension. The scale also provides an overall score for mindful eating.[27, 28]

Statistical Analysis

The sample size was calculated based on a previously conducted cross-sectional study.[29] Using the data from this study, the sample size was determined using the G-Power program with a 95% confidence interval, 95% power, 5% Type I error probability, and an effect size of 0.4, resulting in a required sample size of 226 participants.

The data were statistically analyzed using the SPSS (Statistical Package for the Social Sciences) version 29.0. Frequency

distributions were utilized to describe individuals' characteristics, including academic year and department, type of residence, alcohol and smoking habits, and eating behaviors. Descriptive statistics employed median, maximum, and minimum values. The Kolmogorov-Smirnov test was conducted to assess whether the mean scores of the scale adhered to a normal distribution. Comparisons between groups were performed using non-parametric Mann-Whitney U Test. The Chi-Square Test was employed to analyze categorical variables expressed as counts and percentages. The Spearman correlation test was utilized to evaluate the relationships between variables. For predicting PSQI scores in relation to NEQ, MEQ, and sociodemographic factors, linear regression analyses were conducted. Statistical significance was set at $p < 0.05$ for all analyses.

Limitations of the Study

This study has several limitations; the single-center design may limit the generalizability of the findings. Additionally, selection bias may arise due to a higher likelihood of participation from individuals with greater interest in nutrition and healthy living. Furthermore, reliance on self-reported weight and height presents a limitation regarding the accuracy of the study. Another limitation is that all participants were female, which restricts the applicability of the results to a broader population. Lastly, the cross-sectional nature of the study prevents the establishment of causal relationships between the variables.

RESULTS AND DISCUSSION

This study investigates the impact of mindful eating, night eating syndrome, and dietary habits on sleep quality among female students in the Faculty of Health Sciences.

A total of 437 individuals participated in the research. Those who provided incomplete information regarding age (n=21), department and class (n=2), and residence (n=1) were excluded, along with married participants (n=3) to maintain the homogeneity of the general population. Furthermore, participants for whom the PSQI scale could not be calculated (n=36) and those lacking height and weight information (n=13) were also omitted from the analysis. Following these exclusions, a total of 360 participants were included in the final analyses.

The sociodemographic characteristics of the study population based on sleep quality are detailed in Table 1. All participants were single, and no cases of antidepressant or sleep medication use were reported. There were no records of psychological diagnoses. Overall, vitamin use was reported at 5%, dieting at 13.1%, and general health status at 95%, demonstrating similarities between the groups with good and poor sleep quality. Of the participants, 40.8% were classified as good sleepers, while 59.2% were categorized as poor sleepers. The mean age of the participants was 20.71 ± 1.37 years, and the mean BMI was 22.58 ± 3.84 kg/m². The mean values for age, BMI, and water intake did not significantly differ between the two groups ($p > 0.05$). Additionally, there were no significant differences in the distribution of BMI categories, academic department, vitamin use, health status, alcohol consumption, or dietary practices between the good and poor sleeper groups. However, there was a significant difference in the proportion of second-year students between those with good and poor sleep quality ($p = 0.035$). Furthermore, participants living in dormitories were more likely to experience poor sleep quality compared to those residing in houses ($p = 0.027$). The proportion of smokers with poor sleep quality was significantly higher ($p = 0.000$), and individuals with poor sleep quality were more likely to skip meals than those with good sleep quality ($p = 0.004$). Additionally, breakfast skipping was significantly more common among those with poor sleep quality ($p = 0.019$).

Table 1. Sociodemographics of the study population based on sleep quality (n=360)

Demographics	Total n (%)	Sleeping quality Good (n=147) n (%)	Sleeping quality Poor (n=213) n (%)	p value
Age (mean ± SD)	20.71 ± 1.37	20.76 ± 1.43	20.69 ± 1.33	0.537[b]
BMI (kg/m^2), (mean ± SD)	22.58 ± 3.84	22.59 ± 4.01	22.57 ± 3.72	0.890[b]
<18.5	52 (14.4)	28 (19.0)	24 (11.3)	0.090[a]
18.5-24.9	222 (61.7)	80 (54.4)	142 (66.7)	
25.0-29.9	71 (19.7)	32 (21.8)	39 (18.3)	
≥30	15 (4.2)	7 (4.8)	8 (3.8)	
Academic year				
First	92 (25.6)	37 (25.2)	55 (25.8)	0.035[a]
Second	106 (29.4)	32 (21.8)	74 (34.7)	
Third	82 (22.8)	39 (26.5)	43 (20.2)	
Last	80 (22.2)	39 (26.5)	41 (19.2)	
Department				
Midwifery	135 (37.5)	60 (40.8)	75 (35.2)	0.081[a]
Nursing	194 (53.9)	80 (54.4)	114 (53.5)	
Nutrition and Dietetics	31 (8.6)	7 (4.8)	24 (11.3)	
Type of recidence				
House	149 (41.4)	71 (48.3)	78 (36.6)	0.027[a]
Dormitory	211 (58.6)	76 (51.7)	135 (63.4)	
Smoking status				
Yes	46 (12.8)	6 (4.1)	40 (18.8)	0.000[a]
Never smoked	290 (80.6)	129 (87.8)	161 (75.6)	
Quit smoking	24 (6.7)	12 (8.2)	12 (5.6)	
Alcohol consumption				
Yes	15 (4.2)	2 (1.4)	13 (6.1)	0.075[a]
Never drink alcohol	335 (93.1)	140 (95.2)	195 (91.5)	
Quit drinking alcohol	10 (2.8)	5 (3.4)	5 (2.3)	
No	313 (86.9)	138 (%93.9)	195 (%91.5)	
Skipping meal				
Yes	244 (67.8)	87 (59.2)	157 (73.7)	0.004[a]
No	116 (32.2)	60 (40.8)	56 (26.3)	
Skipped meals				
Breakfast	59 (16.4)	22 (15.0)	37 (17.4)	0.019[a]
Lunch	181 (50.3)	66 (44.9)	115 (54.0)	
Dinner	8 (2.2)	1 (0.7)	7 (3.3)	
Water intake (L/day), (mean ± SD)	1.75 ± 0.64	1.76 ± 0.64	1.74 ± 0.64	0.889[b]

BMI, body mass index; SD, standard deviation

The data are presented as the n % (chi-square test) and mean ± SD (Mann-Whitney U test), denoted by a, and b, respectively.

Table 2 presents significant differences in PSQI scores between participants classified as good and poor sleepers. The total PSQI score was significantly higher in the poor sleep quality group (8.42 ± 2.15) compared to the good sleep quality group (3.01 ± 1.50, $p < 0.001$). In terms of PSQI dimensions, subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, use of sleep medications, and daytime dysfunction were all significantly worse in those with poor sleep quality ($p < 0.001$ for each dimension). However, no significant differences were observed in the sleep disturbance dimension ($p = 1.000$). Additionally, the MEQ-30 scores did not differ significantly between the two groups ($p > 0.05$), while the NEQ total scores were significantly higher among participants with poor sleep quality ($p = 0.003$). Other dimensions related to mindful eating, including disinhibition, emotional eating, and eating control, showed no significant differences between the groups ($p > 0.05$).

Table 2. Comparison of sleep quality variables and eating behavior metrics by sleep quality

Variables	Total	Sleeping quality		p Value
		Good	Poor	
PSQI total (min. 0–max. 21)	6.21 ± 3.28	3.01 ± 1.50	8.42 ± 2.15	<0.001[b]
PSQI dimensions				
Subjective sleep quality (min. 0–max. 3)	1.30 ± 0.95	0.53 ± 0.68	1.83 ± 0.72	<0.001[b]
Sleep latency (min. 0–max. 3)	1.36 ± 0.88	0.95 ± 0.74	1.64 ± 0.86	<0.001[b]
Sleep duration (min. 0–max. 3)	1.29 ± 1.13	0.61 ± 0.77	1.77 ± 1.09	<0.001[b]
Habitual sleep efficiency (min. 0–max. 3)	0.55 ± 0.84	0.16 ± 0.43	0.82 ± 0.94	<0.001[b]
Sleep disturbances (min. 0–max. 3)	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	1.000[b]
Use of sleep medications (min. 0–max. 3)	0.26 ± 0.61	0.10 ± 0.30	0.37 ± 0.73	<0.001[b]
Daytime dysfunction (min. 0–max. 3)	1.45 ± 1.01	0.67 ± 0.77	1.99 ± 0.76	<0.001[b]
MEQ-30 total	3.23 ± 0.44	3.26 ± 0.42	3.22 ± 0.46	0.432[b]
MEQ-30 dimentions				
Disinhibition	3.28 ± 0.80	3.30 ± 0.78	3.27 ± 0.81	0.588[b]
Emotional Eating	3.13 ± 0.94	3.17 ± 0.96	3.10 ± 0.93	0.479[b]
Eating Control	3.69 ± 0.86	3.67 ± 0.83	3.70 ± 0.88	0.712[b]
Awareness	3.13 ± 0.42	3.15 ± 0.41	3.12 ± 0.43	0.583[b]
Eating Discipline	2.84 ± 0.63	2.88 ± 0.64	2.82 ± 0.62	0.568[b]
Mindful Eating	3.19 ± 0.51	3.25 ± 0.50	3.15 ± 0.51	0.057[b]
Interference	3.54 ± 0.85	3.55 ± 0.89	3.52 ± 0.83	0.671[b]
NEQ total	17.63 ± 9.28	16.32 ± 8.55	18.53 ± 9.66	0.003[b]
Yes	69 (19.2)	24 (16.3)	45 (21.1)	0.255[a]
No	291 (80.8)	123 (83.7)	168 (78.9)	

PSQI, Pittsburgh Sleep Quality Index; MEQ-30, Mindful Eating Questionnaire (30-item version); NEQ, Night Eating Questionnaire

The data are presented as the n % (chi-square test) and mean ± SD (Mann-Whitney U test), denoted by a, and b, respectively.

A positive correlation was identified between the total PSQI score and the total NEQ score ($r = 0.136$, $p < 0.01$). Subjective sleep quality was negatively correlated with the total mindful eating score (MEQ-30) ($r = -0.120$, $p < 0.05$), as well as with the mindful eating dimension ($r = -0.114$, $p < 0.05$) and eating discipline ($r = -0.125$, $p < 0.05$). Daytime dysfunction was also negatively correlated with the total mindful eating score ($r = -0.128$, $p < 0.05$), as well as with emotional eating ($r = -0.105$, $p < 0.05$) and eating control ($r = -0.108$, $p < 0.05$). Sleep disturbances within the PSQI dimensions could not be computed because at least one of the variables was constant (Table 3).

Table 3. Correlations between PSQI, MEQ-30, NEQ

Variables	MEQ-30 total	Disinhibition	Emotional Eating	Eating Control	Awareness	Eating Discipline	Mindful Eating	Interference	NEQ total
Total PSQI	**-0.128***	-0.064	-0.077	-0.003	-0.033	-0.064	-0.078	-0.053	**0.136****
PSQI dimensions									
Subjective sleep quality	**-0.120***	-0.078	-0.087	-0.025	-0.058	**-0.114***	**-0.125***	-0.079	**-0.132***
Sleep latency	-0.019	-0.015	-0.035	-0.015	**0.105***	-0.043	-0.013	-0.027	0.012
Sleep duration	0.031	0.018	0.013	0.079	-0.031	-0.010	0.013	0.012	0.053
Habitual sleep efficiency	0.006	-0.040	0.006	0.035	0.002	0.042	-0.012	-0.002	0.042
Use of sleep medications	-0.091	-0.024	-0.084	-0.086	-0.063	-0.012	-0.035	-0.062	0.079
Daytime dysfunction	**-0.128***	-0.095	**-0.105***	-0.039	-0.075	-0.078	-0.108*	-0.050	**0.167****

PSQI, Pittsburgh Sleep Quality Index
*Correlation significant at $p < 0.01$; **Correlation significant at $p < 0.05$.

Table 4 illustrates significant sociodemographic and eating behavior predictors of sleep quality, as calculated through linear regression. Higher total PSQI scores, indicative of poorer sleep quality, were significantly associated with meal skipping (Beta = 0.101), alcohol consumption (Beta = 0.163), high BMI (Beta = 0.610), and NEQ score (Beta = 0.084). Specifically, participants with a higher BMI and those who consumed alcohol had significantly higher PSQI scores, indicating poorer sleep quality. Additionally, meal skipping and higher NEQ scores were significantly associated with poorer sleep quality.

Table 4. Sociodemographic and Eating Behavior Metrics as Predictors of Sleep Quality

	Unstandardized Coefficients		Standardized Coefficients	95.0% Confidence Interval for B		p Value
	B	Std. Error	Beta	Lower Bound	Upper Bound	
Staying at dormitory (yes or no)	0.025	0.298	0.004	-0.562	0.611	0.934
Smoking status (yes or no)	0.306	0.407	0.031	-0.495	1.106	0.453
Skipping meal (yes or no)	0.716	0.283	0.101	0.159	1.273	0.012
Alcohol status (yes or no)	2.629	0.651	0.163	1.348	3.910	<0.001
Clinical year (yes or no)	-0.462	0.311	-0.066	-1.073	0.150	0.138
High BMI (yes or no)	4.345	0.287	0.610	3.780	4.910	<0.001
NEQ score	0.032	0.016	0.084	0.001	0.062	0.043
MEQ score	-0.295	0.300	-0.040	-0.885	0.296	0.327

Test applied: linear regression; dependent variable: total PSQI score (higher scores indicate poorer sleep quality); independent variables: staying at dormitory (yes = 1, no = 0), smoking status (yes = 1, no = 0), skipping meals (yes = 1, no = 0), alcohol consumption (yes = 1, no = 0), being in clinical years (yes = 1, no = 0), high BMI (yes = 1, no = 0), NEQ score (higher scores are associated with night eating syndrome), MEQ score (higher scores indicate higher levels of mindful eating).

The importance of a healthy lifestyle and good sleep quality for individuals' overall health cannot be overstated. However, there is a general consensus that university students experience low sleep quality and insufficient sleep duration.[30] Additionally, the demanding nature of education in the health field complicates the maintenance of healthy habits, such as balanced nutrition, adequate sleep, and regular physical activity, which have been associated with negative outcomes like weight gain and burnout.[31, 32]

In a study conducted among university students in Turkey, the median sleep quality score was found to be 6.61, while another study reported this value as 6.9 ± 2.4.[33, 34] In Spain, a study involving university students indicated a PSQI score of 6.39 ± 3.58.[21] In the current study, the average PSQI score was found to be lower than in previous studies, at 6.21 ± 3.28.[21, 33, 34] Research conducted in

European countries has reported that the rates of poor sleep quality among university students range from 23.9% to 51.6%.[21, 35, 36] A systematic review involving 16,478 university students from various countries found the prevalence of sleep problems to be 18.5%.[37]. In the study by Akdevelioğlu et al., it was noted that 60% of the students had poor sleep quality. Similarly, in this study, 59.2% of students were found to have poor sleep quality, reflecting a comparable frequency to previous findings. The high rates of poor sleep quality observed among university students may be attributed to factors such as living away from home, academic performance anxiety, and difficulties in adapting to dormitory environments.[34] Consistent with previous studies, this research also indicates that students living in dormitories experience higher frequencies of poor sleep quality, suggesting that the sleep environment may significantly impact sleep quality. [34, 38]

Some researchers suggest that sleep quality is associated with a high BMI.[39] The previous study indicated that overweight and obese university students had statistically worse sleep quality compared to individuals with normal BMI.[40]

Similarly, in this study, a high BMI was associated with a lower sleep quality score. This relationship may stem from the impact of sleep quality on dietary patterns, as there is a significant correlation between the deterioration of sleep quality among university students and a decrease in the number of main meals alongside an increase in the frequency of snacks. Additionally, participants with shorter sleep durations exhibited a higher rate of meal skipping.[41]. This study also suggests a tendency for participants with poor sleep quality to skip meals more frequently.

University students are often exposed to high levels of stress due to factors such as academic schedules and workload, which can lead to irregular eating habits and nighttime eating patterns.[42] Among university students experiencing Night Eating Syndrome (NES), disruptions in sleep and eating patterns, as well as shifts in biological eating times, have been observed, supporting the existence of a significant relationship between NES and sleep quality.[34, 40] The findings of this study corroborate previous research, indicating an increase in nighttime eating behaviors with a decline in sleep quality. Moreover, a significant positive correlation was found between NES and the components of sleep quality.[34]. In this study, an increase in nighttime eating scores was associated with a decrease in subjective sleep quality and an increase in daytime dysfunction. This relationship between poor sleep quality and NES may be explained by the reduced sleep duration experienced by individuals with NES.[43] Conversely, NES may also arise as a consequence of diminished sleep quality. Given that the triggering factors are not fully understood, a vicious cycle may exist between poor sleep quality and NES.[43]

Mindful eating refers to individuals' ability to reflect on and evaluate their eating processes. In this context, the impact of mindful eating on the adoption of healthy dietary habits and sleep quality becomes significant. Research suggests a positive relationship between mindful eating and sleep quality, with mindful eating being linked to improved overall sleep quality and fewer sleep-related issues in adults.[29, 44] Evidence indicates that lower levels of mindful eating among university students are associated with a higher prevalence of irregular eating and a lower BMI. [45]

CONCLUSION AND RECOMMENDATIONS

Individuals with poor sleep quality have been found to have lower mindful eating scores and higher night eating scores. This finding suggests that individuals with poor sleep habits tend to eat less mindfully. Additionally, an observed phenomenon relates to the impact on participants' daytime performance, demonstrating an inverse relationship with mindful eating scores; better mindful eating habits enhance daytime functioning. Therefore, improving sleep quality may contribute to the development of mindful eating behaviors, thereby enhancing individuals' daytime performance.

These findings can facilitate a better understanding of the relationship between sleep and nutrition, promoting the maintenance of healthy habits among university students.

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