Turk J Fam Pract 2025;29(3):108-117
DOI: 10.54308/TJFP.2025.821

Research Article

Night eating syndrome negatively affects the physical and mental quality of life of female university students

Meryem Elif Öztürk[1]

[1]Department of Nutrition and Dietetics, Faculty of Health Sciences, Karamanoğlu Mehmetbey University, Karaman, Türkiye

ABSTRACT

Background: Night eating syndrome (NES) is a clinical syndrome, which is related to sleep disturbance and depression. NES may be associated with obesity and may negatively affect quality of life of university students. The aim of this study was to examine the relationship between NES with obesity and health related quality of life in female university students.

Methods: A total of 293 female university students aged 18-29 were recruited to study. The demographic characteristics of students were questioned. Students filled out the Night Eating Questionnaire and an instrument determining health related quality of life (SF-36). Anthropometric measurements (height, weight and waist circumference) of participants were taken by professionals. Correlation and linear regression analysis were run to analyze collected data.

Results: About 57% of students' mothers were illiterate or had primary school degrees. The NES prevalence was 6.8% in students. There was no significant relationship between anthropometric measurements (body mass index, waist circumference) and the presence of NES and quality of life scores ($p>0.05$). However, higher NES scores were associated with lower quality of life sub-scores (physical function, role limitations due to emotional problems, vitality, emotional well-being, social functioning, pain, general health perception) ($p<0.05$). Simple linear regression analysis results also showed that NES scores were related to lower physical and mental health related quality of life scores ($p<0.05$).

Conclusions: Although night eating syndrome was not associated with obesity in female university students, it directly affects the physical and mental quality of life of students, adversely. Strategies to cope with night eating syndrome should be developed for university students.

Keywords: Anthropometry, night eating syndrome, quality of life, university students

Introduction

Night eating syndrome (NES) is a clinical syndrome characterized by evening hyperphagia, nocturnal eating, and associated sleep and mood symptoms.[1] The descriptive characteristics of the NES are morning anorexia or skipping breakfast ≥ 4 mornings per week, tending to eat after dinner or during the night, difficulty in sleep onset or maintenance ≥4 times a week, believing that eating

✉ Meryem Elif Öztürk ▪ merlif-42@windowslive.com
Received: 07.01.2025 **Accepted:** 29.04.2025 **Published:** 15.06.2025

Copyright © 2025 The Author(s). Published by Turkish Association of Family Physicians. This is an open access article distributed under the Creative Commons Attribution License (CC BY), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is properly cited.

is necessary to fall or return to sleep and depressed mood in the evening.[2] The NES prevalence ranges between 1.5% and 4.6% in general population.[3,4]

University students are a high-risk group for developing NES. Insufficient and irregular sleep in university students is present at alarming levels.[5] Skipping breakfast, evening snacks, and eating late at night are also commonly observed poor eating habits among university students.[6,7] It is reported that disturbed eating behaviour is more prevalent in university students particularly females than in the general population.[8,9] University students especially females are vulnerable to developing anxiety and depressive symptoms, as well.[10,11] Being away from family, facing psychological distress due to trials of everyday academic life, class schedules, the double burden of both work and study and disorganization of daily routine may be the reasons for developing poor eating habits in university students.[12]

NES is seen as one of the main eating behaviors causing obesity. It is known that overweight and obesity prevalence is rising among university students.[13] While some studies suggest that NES triggers obesity, others report conflicting results.[14,15] Studies declared that NES prevalence is higher in psychiatric outpatients and NES is related to depression and low self-esteem among obese people.[16,17]

Health-related quality of life (HRQL) has been surveyed for many years to support healthcare in general and disease-specific populations. Measuring health-related quality of life can be helpful to predict and indicate morbidity and mortality in a large population. Studies reported that obesity is negatively associated with HRQL in adults and children.[18,19] HRQL was also proved to be lower among female university students.[20] Due to disrupting sleep and causing daytime fatigue, NES may also be harmful to HRQL.[21] The relationship between NES and HRQL is scarce among university students. Female university students were at risk of obesity, NES and low HRQL more than males. Therefore, the aim of the study was to examine the relationship between NES with HRQL and obesity among female university students.

Material and Methods

Study design

A cross-sectional study was conducted on 300 volunteer female university students aged 18-29 years at Karamanoğlu Mehmetbey University in Karaman in October 2024. Participants were selected by incidental sampling. Students who were younger than 18 years or older than 29 years, declined to participate and did not allow their weight and height to be measured were excluded from the study. Before the study, the minimum sample size was determined between 74 and 305 from various studies according to the calculation by taking the alpha value of 0.05, and the theoretical power of 0.80 and 0.95.[22,23]

A total of 300 female students were surveyed, however, 7 participants were excluded from the study due to incomplete data and being younger than 18 years. Therefore, 293 students completed the study. Written informed consent was obtained from students. The research adhered to the declarations of Helsinki.

The demographic characteristics such as age, gender, mother and father education and sibling numbers were questioned. Night Eating Questionnaire and Short Form Health Survey (SF-

36) were applied with face to face interviews by professionals. The anthropometric measurements were taken by professionals who were not involved in the study.

Ethical approval

The study was approved by Karamanoğlu Mehmetbey University Ethics Committee (Ethical code: 02-2024/22. Approval date:02.10.2024)

Anthropometric measurements

The body weights of female students were measured to the nearest 0.1 kg with a portable scale. Height to the nearest 0.1 cm was measured with a tape. Body mass index was calculated by dividing weight (in kilograms) by the square of height (in meters) for each subject. Students were classified as underweight, normal, overweight and obese according to World Health Organization.[24]

Night Eating Questionnaire (NEQ)

NEQ was developed to determine NES and consists of 14 items, each item is scored between 0-4 with a likert-type measurement, and only the 13th question is not included in total score. Therefore, the total score is between 0-52. In addition, questions 1, 4 and 14 are reverse scored. The cut-off score was determined as ≥25 to identify NES.[25] Turkish validation was performed by Atasoy et al.[26] in 2014.

SF-36

SF-36 is an instrument that was developed to determine HRQL and consists of 36 questions. The questionnaire is simple and brief. SF-36 has eight subgroups, namely physical function, role limitations due to emotional problems, vitality, role limitations due to physical health, emotional wellbeing, social functioning, pain, general health perception. Each subgroup has distinct scores (0-100) and higher scores indicate better quality of life within that subgroup.[27] Turkish validation was performed by Bilir Kaya and İçağasıoğlu.[28] Physical component score (PCS) and mental component score (MCS) were calculated by obtaining Z-scores of subscores, using respective factor coefficients of each subscore and finally T-scores (mean=50, SD=10).[29] To reduce inconsistent results between the SF-36 subscores with PCS and MCS, it was suggested that uncorrelated (orthogonal) summary scores should be used along with the correlated (obliquely derived) summary scores. Therefore, we used both uncorrelated PCS, MCS (PCS_{uc}, MCS_{uc}) and correlated PCS, MCS (PCS_c, MCS_c).[30,31]

Statistical analysis

All statistical analyses were carried out with Statistical Package for Social Sciences (IBM SPSS 21.0). Numeric variables such as anthropometric data, NEQ score, SF-36 subscores were reported as means and standard deviations (SD)s. Since variables were parametric, Pearson's correlation test was used to determine relationships between the anthropometric measurements, NEQ score, SF-36 subscores, PCS_{uc}, MCS_{uc}, PCS_c, MCS_c. We ran two simple linear regression analyses to examine the effect of NEQ on PCS_c, MCS_c. The independent variable was NEQ in both models. In the first model, PCSc was the dependent variable and in the second model, MCSc was the dependent variable. After simple linear regression analysis, multiple linear regression models were tried. However, they did not meet the regression criteria and perform well. Therefore simple regression models were shown in this study. Statistical significance was defined as $p<0.05$

Results

A total of 293 female students completed the study. The mean age of the female students was 20.9±1.7 years (18-29). The mean NEQ score was 16±5 among students and 6.8 % of them had NES. About 57% of students' mothers were illiterate or had primary school degrees. Most of the students (61.1%) had three or more siblings. The mean BMI of the students was 21.5±3 (16.0-35.3). Only 13.3% of them were overweight and obese (Table 1).

The mean physical functioning, vitality and social functioning scores were 83.98±13.42, 55.07±18.94, 68.89±22.54 among university students, respectively (Table 2).

No correlation was found between BMI, waist circumference with SF-36 subgroup scores, physical and mental component scores and NEQ score (Table 3).

NEQ score was negatively correlated with physical functioning ($p<0.015$), role limitations due to emotional problems, vitality, emotional wellbeing, social functioning, pain, general health perception subscores among university students ($p<0.001$). Higher NEQ score was also related to lower physical and mental health related quality of life scores ($p<0.001$) (Table 4).

According to regression analysis, the NEQ score was directly related to lower physical and mental component scores ($p<0.001$). NEQ score was significantly associated with a 38% decrease in PCS_c and 27% decrease in MCS_c. The models with NEQ scores explained 8% and 19% of the variances in PCS_c and MCS_c, respectively (Table 5).

Table 1. Demographic and anthropometric characteristics and NES prevalence of university students (N=293)

	Mean±SD (Min-Max)
Age (years)	20.9±1.7 (18-29)
Age groups *	
18-19	49 (16.8)
20	72 (24.6)
21	78 (26.6)
22	54 (18.4)
23-29	40 (13.6)
Mother Education*	
Illiterate	19 (6.5)
Literate	23 (7.8)
Primary	127 (43.3)
Secondary	43 (14.7)
High school	51 (17.4)
University	30 (10.3)
Paternal Education*	
Illiterate	4 (1.4)
Literate	6 (2)
Primary	92 (31.4)
Secondary	58 (19.8)
High school	66 (22.5)
University	67 (22.9)
Siblings*	
≤ 1	17 (5.8)
2	100 (34.1)
≥3	176 (61.1)
BMI*	
Below 18.5 (underweight)	53 (18.1)
18.5-24.9 (normal)	201 (68.6)
25.0-29.9 (overweight)	36 (12.3)
30 and above (obese)	3 (1)
BMI (kg/m^2)	21.5±3.0 (16.0-35.3)
Weight (kg)	57.9±8.8 (40.0-86.0)
Waist Circumference (cm)	74.3±8.1 (54.0-98.0)
NES presence (N=293)*	
Yes	20 (6.8)
No	273 (93.2)

* N (%)

Table 2. SF-36 subgroup scores of female university students

SF-36 Subgroup Scores (N= 293)	Mean±SD (Min-Max)
Physical functioning	83.98±13.42 (30-100)
Role limitations due to emotional problems	45.85±40.58 (0-100)
Vitality	55.07±18.94 (0-90)
Role limitations due to physical health	79.18±32.01 (0-100)
Emotional wellbeing	65.73±16.48 (0-100)
Social functioning	68.89±22.54 (0-100)
Pain	73.69±18.67 (12.5-100)
General health perception	59.47±16.02 (0-100)

Table 3. The correlation coefficients between anthropometric measurements with SF-36 subgroup scores and NEQ score (r)

	Weight (kg)	BMI (kg/m^2)	Waist Circumference (cm)
Physical functioning	-0.072	-0.055	-0.069
Role limitations due to emotional problems	0.097	0.108	0.112
Vitality	-0.019	0.006	0.037
Role limitations due to physical health	-0.031	0.031	-0.064
Emotional wellbeing	-0.079	-0.087	-0.080
Social functioning	0.075	0.075	0.038
Pain	0.038	0.015	0.028
General health perception	0.029	0.059	0.078
PCS_{uc}	-0.027	0.006	-0.029
MCS_{uc}	0.034	0.032	0.047
PCS_c	0.002	0.038	0.004
MCS_c	-0.001	0.009	0.015
NEQ score	0.040	0.067	0.058

Pearson correlation

Table 4. The correlation coefficients between SF-36 subgroup scores and NEQ score (r)

	NEQ Score	p
Physical functioning	-0.142*	0.015
Role limitations due to emotional problems	-0.200**	<0.001
Vitality	-0.327**	<0.001
Role limitations due to physical health	-0.085	0.146
Emotional wellbeing	-0.384**	<0.001
Social functioning	-0.262**	<0.001
Pain	-0.170**	<0.001
General health perception	-0.201**	<0.001
PCS_{uc}	-0.089	0.127
MCS_{uc}	-0.356**	<0.001
PCS_c	-0.266**	<0.001
MCS_c	-0.405**	<0.001

Pearson correlation, *p<0.05, **0.001

Table 5. Simple linear regression analysis for physical and mental component scores with NEQ score

Dependent variable	**PCS_c (N= 289)**				
	B	**95% CI for B**		**p**	**R^2**
		Lower	**Upper**		
Independent variable					
NEQ score	-0.382	-0.536	-0.228	<0.001	0.077
Dependent variable	**MCS_c (N=290)**				
	B	**95% CI for B**		**p**	**R^2**
		Lower	**Upper**		
Independent variable					
NEQ score	-0.272	-0.338	-0.207	<0.001	0.188

Unstandardized coefficient (B) with 95% confidence interval (CI), coefficient of determination (R^2) for overall model fit. PCS: physical component score; MCS: mental component score.

Discussion

This study aimed to examine the relationship between NES with obesity and HRQL among female university students.

NES prevalence was 6.8% in this study. Although Rand et al.[3] reported prevalence of NES is 1.5% in the general population, there is no precise prevalence for university students. The studies conducted on university students reported different results. While Yahia et al.[32], Ahmad et al.[33] and Tekin and Öner[34] reported high prevalences of NES (11.46%, 33.9% and 67%); Runfola et al.[35] and Özgür and Uçar[15] reported low prevalence of NES (4.6%, 1.4%) among female university students. Some departments where students studied such as health science, medicine and biology may increase the nutritional knowledge of the students due to being directly related to health. This may affect the food choice of the students and can cause bias in the results. Because it has been known that nutritional knowledge causes healthy eating attitudes and practices.[36] Therefore, the lower prevalence of NES in some studies may be due to the nutrition education of the participants. Besides, ethnic and cultural differences may be another factor affecting the results.

In this study, no relationship was found between BMI and waist circumference with NEQ score among female university students similar to other studies.[15,32,35,37] Most of the researchers came to the conclusion that the BMI-increasing and obesity-causing effect of NES may occur in later life not in young ages.[15,32,37]

Regarding health-related quality of life, physical functioning, role limitations due to physical health had highest subscores and role limitations due to emotional problems, vitality had lowest subscores in this study. Sabbah et al.[38] reported similar findings. On the other hand, all subscores of the present study were higher than Oztasan et al.[39] but lower than Latas et al.[40] The different results may be due to conducting the studies on different samples, for instance, the departments where students study such as medicine or nursing and also having different sample sizes.[39]

No relationship was found between BMI with SF-36 subscores, PCS, similarly Sabbah et al.[38], in this study. However, other studies reported that a higher BMI or obesity is associated with

lower physical component scores in HRQL, in university students.[41-43] Gender factors may be one of the reasons for the different results. This study and the study of Sabbah et al.[38] were based on female students. However, those studies reported conflicted results were conducted on both male and female students. Besides, in this study and the study of Sabbah et al.[38] the obese and overweight students were relatively less than others, which may be another confounding factor while comparing the results. MCS was not related to BMI, as well, similar to other studies.[38,44]

It was determined that high NEQ score is associated with lower HRQL (SF-36) subscores except for role limitations due to the physical health component, in this study. In addition, high NEQ score was associated with low physical and mental component scores. It has been declared that night eating syndrome is closely related to low sleep quality, therefore excessive daytime sleepiness and low subjective well-being (happiness, life satisfaction).[32,37,45] Studies stated that NES is associated with low MCS but not PCS in bariatric surgery candidates.[46,47] Having uncontrolled eating in response to emotional cues can promote poorer psychological states in these patients, which can cause low MCS.[46] Runfola et al.[35] stated people having NES have more mental health problems and less quality of life. Likewise, NES was found to be related to depression, anxiety and higher psychological distress.[48-50] However, in this study, NES was associated with low physical health, as well. Higher NEQ score is related to lower physical function, general health perceptions and higher pain. People having NES are expected to have insomnia at least four to five times per week.[51] Insomnia co-occurs with chronic pain, has an impact on physical function and is associated with reduced health perception.[52-54]

This study is important in terms of observing the relationship between NEQ and physical and mental health quality among young people. However, there are many limitations. The first one was gender. It was both a limitation and a strength, in this study. The results for female students cannot be generalized for male students and gave us limited knowledge. On the other hand, this particular demographic group provided to develop a better model. Second, the sample size was relatively small. Third, the study was limited to a specific small university. Fourth, some factors such as sleep hours, physical exercise, and emotional eating could be questioned along with SF-36 to explain better the relationship between NEQ with PCS and MCS. Fifth, the accommodation type was important to access food. For example, some dormitories may be so restrictive for sleep hours and food access. This could be questioned, as well.

Conclusion

In conclusion, NES negatively affects the quality of life of university students both physically and mentally. The direct and detrimental effect of NES on physical and mental quality of life was observed in young people, regardless of important confounding factors such as obesity. Strategies such as educational programs and dietary interventions should be developed to cope with night eating syndrome among university students. Universities may provide some educational programs to increase awareness on this issue. Healthcare professionals may organize occasional trainings to inform the public. Dietary interventions may be applied to university students suffering from NES. Governments may create a public service announcement to inform the public.

Acknowledgments

We are very grateful to health professionals who helped data collection and to the participants who participated in the study.

Ethical approval

This study has been approved by the Karamanoğlu Mehmetbey University Ethics Committee (approval date 02.10.2024, number 02-2024/22). Informed consent was obtained from the participants.

Author contribution

The author declare contribution to the paper as follows: Study conception and design: MEÖ; data collection: MEÖ; analysis and interpretation of results: MEÖ; draft manuscript preparation: MEÖ. The author reviewed the results and approved the final version of the article.

Source of funding

The author declare the study received no funding.

Conflict of interest

The author declare that there is no conflict of interest.

References

1. Tu CY, Meg Tseng MC, Chang CH. Night eating syndrome in patients with eating disorders: Is night eating syndrome distinct from bulimia nervosa? J Formos Med Assoc. 2019;118:1038-1046. **[Crossref]**
2. Vander Wal JS. Night eating syndrome: a critical review of the literature. Clin Psychol Rev. 2012;32:49-59. **[Crossref]**
3. Rand CS, Macgregor AM, Stunkard AJ. The night eating syndrome in the general population and among postoperative obesity surgery patients. Int J Eat Disord. 1997;22:65-69. **[Crossref]**
4. Ahmed S, Harbi FSA, Saeed OA, Ali SI. Prevalence of Night Eating Syndrome amongst Medical Students in Saudi Arabia. IJMDC. 2019;3:22-25. **[Crossref]**
5. Lund HG, Reider BD, Whiting AB, Prichard JR. Sleep patterns and predictors of disturbed sleep in a large population of college students. J Adolesc Health. 2010;46:124-132. **[Crossref]**
6. Joung HS, Koo NS. The Dietary and Late-night eating Behavior according to Residence Type of University Students in Daejeon. KJHE. 2014;23:721-732. **[Crossref]**
7. Bevet S, Niles MT, Pope L. You can't "nudge" nuggets: an investigation of college late-night dining with behavioral economics interventions. PLoS One. 2018;13:e0198162. **[Crossref]**
8. Quick VM, Byrd-Bredbenner C. Disturbed eating behaviours and associated psychographic characteristics of college students. J Hum Nutr Diet. 2013;26(Suppl 1):53-63. **[Crossref]**
9. Solmi F, Hatch SL, Hotopf M, Treasure J, Micali N. Prevalence and correlates of disordered eating in a general population sample: the South East London Community Health (SELCoH) study. Soc Psychiatry Psychiatr Epidemiol. 2014;49:1335-1346. **[Crossref]**
10. Gao W, Ping S, Liu X. Gender differences in depression, anxiety, and stress among college students: a longitudinal study from China. J Affect Disord. 2020;263:292-300. **[Crossref]**
11. Riboldi I, Cavaleri D, Calabrese A, et al. Digital mental health interventions for anxiety and depressive symptoms in university students during the COVID-19 pandemic: a systematic review of randomized controlled trials. Rev Psiquiatr Salud Ment. 2023;16:47-58. **[Crossref]**
12. Abreu DDC, Silva JPCD, Paiva LDS, Figueiredo FWDS, Souto RPD. Night eating syndrome among university students: are aspects of academic life associated with eating disorders? JHGD. 2023;33:173-183. **[Crossref]**
13. Hafez SM, Ghazawy E, Mahfouz E, Abd-El Rahman T, Emam S. Obesity/Overweight among University students. Minia, Egypt. MJMR. 2022;33:30-36. **[Crossref]**
14. Andersen GS, Stunkard AJ, Sørensen TIA, Petersen L, Heitmann BL. Night eating and weight change in middle-aged men and women. Int J Obes Relat Metab Disord. 2004;28:1338-1343. **[Crossref]**

15. Özgür M, Uçar A. Ankara'da yaşayan üniversite öğrencilerinde besin bağimliliği ve gece yeme sendromunun değerlendirilmesi [Evaluation of food addiction and night eating syndrome in university students living in Ankara]. Ankara Sağlık Bilimleri Dergisi. 2018;7:10-21.

16. Lundgren JD, Allison KC, Crow S, et al. Prevalence of the night eating syndrome in a psychiatric population. Am J Psychiatry. 2006;163:156-158. **[Crossref]**

17. Gluck ME, Geliebter A, Satov T. Night eating syndrome is associated with depression, low self-esteem, reduced daytime hunger, and less weight loss in obese outpatients. Obes Res. 2001;9:264-267. **[Crossref]**

18. Pinhas-Hamiel O, Singer S, Pilpel N, Fradkin A, Modan D, Reichman B. Health-related quality of life among children and adolescents: associations with obesity. Int J Obes (Lond). 2006;30:267-272. **[Crossref]**

19. Søltoft F, Hammer M, Kragh N. The association of body mass index and health-related quality of life in the general population: data from the 2003 Health Survey of England. Qual Life Res. 2009;18:1293-1299. **[Crossref]**

20. Rakovac M, Pedisic Z, Pranic S, Greblo Z, Hodak D. Sociodemographic and lifestyle correlates of health-related quality of life in Croatian University students. ARQOL. 2012;8:493-509. **[Crossref]**

21. Inoue Y. Sleep-related eating disorder and its associated conditions. Psychiatry Clin Neurosci. 2015;69:309-320. **[Crossref]**

22. Meule A, Allison KC, Brähler E, de Zwaan M. The association between night eating and body mass depends on age. Eat Behav. 2014;15:683-685. **[Crossref]**

23. Gallant A, Drapeau V, Allison KC, et al. Night eating behavior and metabolic heath in mothers and fathers enrolled in the QUALITY cohort study. Eat Behav. 2014;15:186-191. **[Crossref]**

24. World Health Organization (WHO). Obesity: preventing and managing the global epidemic: report of a WHO consultation. Geneva: WHO; 2000. Available at: https://iris.who.int/handle/10665/42330

25. Allison KC, Lundgren JD, O'Reardon JP, et al. The Night Eating Questionnaire (NEQ): psychometric properties of a measure of severity of the Night Eating Syndrome. Eat Behav. 2008;9:62-72. **[Crossref]**

26. Atasoy N, Saraçlı Ö, Konuk N. Gece yeme anketinin Türkçe formunun psikiyatrik ayaktan hasta popülasyonunda geçerlilik ve güvenilirlik çalışması [The reliability and validity of Turkish version of the Night Eating Questionnaire in psychiatric outpatient population]. Anadolu Psikiyatri Derg. 2014;15:238-247. **[Crossref]**

27. Ware JE, Sherbourne CD. The MOS 36-item short form health survey (SF-36): conceptual framework and items selection. Med Care. 1992;30:473-483 **[Crossref]**

28. Bilir Kaya B, İçağasıoğlu A. Reliability and validity of the Turkish version of short form 36 (SF-36) in patients with rheumatoid arthritis. J Surg Med. 2018;2:11-16. **[Crossref]**

29. Ware JE, Kosinski M, Keller SD. SF-36 Physical and mental health summary scales: a user's manual. Boston, MA: The Health Institute; 1994

30. Farivar SS, Cunningham WE, Hays RD. Correlated physical and mental health summary scores for the SF-36 and SF-12 Health Survey, V.I. Health Qual Life Outcomes. 2007;5:54. **[Crossref]**

31. Laucis NC, Hays RD, Bhattacharyya T. Scoring the SF-36 in orthopaedics: a brief guide. J Bone Joint Surg Am. 2015;97:1628-1634. **[Crossref]**

32. Yahia N, Brown C, Potter S, et al. Night eating syndrome and its association with weight status, physical activity, eating habits, smoking status, and sleep patterns among college students. Eat Weight Disord. 2017;22:421-433. **[Crossref]**

33. Ahmad M, Kashoo FZ, Alqahtani M, Sami W, Rizvi M, Bushra A. Relation between night eating syndrome and academic grades among university students. Turk J Endocrinol Metab. 2019;23:85-91. **[Crossref]**

34. Tekin T, Öner N. Üniversite öğrencilerinde öğrenim türü ve cinsiyetin gece yeme sendromuna etkisi [The effect of education type and gender on night eating syndrome in university students]. AUHSJ. 2020;1:141-147. **[Crossref]**

35. Runfola CD, Allison KC, Hardy KK, Lock J, Peebles R. Prevalence and clinical significance of night eating syndrome in university students. J Adolesc Health. 2014;55:41-48. **[Crossref]**

36. Melesse MB, van den Berg M. Consumer nutrition knowledge and dietary behavior in urban Ethiopia: a comprehensive study. Ecol Food Nutr. 2021;60:244-256. **[Crossref]**

37. Nolan LJ, Geliebter A. Night eating is associated with emotional and external eating in college students. Eat Behav. 2012;13:202-206. **[Crossref]**

38. Sabbah I, Sabbah H, Khamis R, Sabbah S, Droubi N. Health related quality of life of university students in Lebanon: lifestyles behaviors and socio-demographic predictors. Health. 2013;5:1-12. **[Crossref]**

39. Oztasan N, Ozyrek P, Kilic I. Factors associated with health-related quality of life among university students in Turkey. Mater Sociomed. 2016;28:210-214. **[Crossref]**

40. Latas M, Stojković T, Ralić T, Jovanović S, Spirić Z, Milovanović S. Medical students' health-related quality of life-a comparative study. Vojnosanit Pregl. 2014;71:751-756. **[Crossref]**

41. Doll HA, Petersen SE, Stewart-Brown SL. Eating disorders and emotional and physical well-being: associations between student self-reports of eating disorders and quality of life as measured by the SF-36. Qual Life Res. 2005;14:705-717. **[Crossref]**

42. Messina G, Quercioli C, Troiano G, et al. Italian medical students quality of life: years 2005-2015. Ann Ig. 2016;28:245-251.

43. Barcones-Molero MF, Sánchez-Villegas A, Martínez-González MA, et al. The influence of obesity and weight gain on quality of life according to the SF-36 for individuals of the dynamic follow-up cohort of the University of Navarra. Rev Clin Esp (Barc). 2018;218:408-416. **[Crossref]**

44. Wee HL, Wu Y, Thumboo J, Lee J, Tai ES. Association of body mass index with Short-Form 36 physical and mental component summary scores in a multiethnic Asian population. Int J Obes (Lond). 2010;34:1034-1043. **[Crossref]**

45. Rönnlund M, Carelli MG. Time perspective biases are associated with poor sleep quality, daytime sleepiness, and lower levels of subjective well-being among older adults. Front Psychol. 2018;9:1356. **[Crossref]**

46. Colles SL, Dixon JB, O'Brien PE. Grazing and loss of control related to eating: two high-risk factors following bariatric surgery. Obesity (Silver Spring). 2008;16:615-622. **[Crossref]**

47. Royal S, Wnuk S, Warwick K, Hawa R, Sockalingam S. Night eating and loss of control over eating in bariatric surgery candidates. J Clin Psychol Med Settings. 2015;22:14-19. **[Crossref]**

48. Sevincer GM, Ince E, Taymur I, Konuk N. Night eating syndrome frequency in university students: association with impulsivity, depression, and anxiety. Psychiatry and Clinical Psychopharmacology. 2016;26:238-247. **[Crossref]**

49. He J, Huang F, Yan J, Wu W, Cai Z, Fan X. Prevalence, demographic correlates, and association with psychological distress of night eating syndrome among Chinese college students. Psychol Health Med. 2018;23:578-584. **[Crossref]**

50. Guo F, Tian Y, Cui Y, Huang C. Night-eating syndrome and depressive symptoms in college freshmen: Fitness Improvement Tactics in Youths (FITYou) project. Psychol Res Behav Manag. 2020;13:185-191. **[Crossref]**

51. Allison KC, Tarves EP. Treatment of night eating syndrome. Psychiatr Clin North Am. 2011;34:785-796. **[Crossref]**

52. Tang NKY. Insomnia co-occurring with chronic pain: clinical features, interaction, assessments and possible interventions. Rev Pain. 2008;2:2-7. **[Crossref]**

53. Mayer G, Jennum P, Riemann D, Dauvilliers Y. Insomnia in central neurologic diseases-occurrence and management. Sleep Med Rev. 2011;15:369-378. **[Crossref]**

54. Ishak WW, Bagot K, Thomas S, et al. Quality of life in patients suffering from insomnia. Innov Clin Neurosci. 2012;9:13-26.