Original Article

TRANSLATIONAL&PRACTICAL MEDICINE

DOI: 10.51271/JTPM-0043

J Transl Pract Med. 2023;2(2):64-68

Frequency of night eating syndrome and its relationship with impulsivity in bariatric surgery candidates

Merve Şahin Can[1], Ferhat Çay[2]

[1]Department of Mental Health and Diseases, Faculty of Medicine, Balıkesir University, Balıkesir, Turkey

[2]Deparment of General Surgery, Faculty of Medicine, Balıkesir University, Balıkesir, Turkey

Cite this article as: Şahin Can M, Çay F. Frequency of night eating syndrome and its relationship with impulsivity in bariatric surgery candidates. *J Transl Pract Med.* 2023;2(2):64-68.

Received: 22/06/2023 ◆ **Accepted**: 25/08/2023 ◆ **Published**: 31/08/2023

ABSTRACT

Aims: Eating attitude disorders are more common in obese individuals compared to the normal population and cause resistance to treatment. In our study, it is aimed to determine the frequency of night eating syndrome, which is an eating disorder, and to reveal its relationship with impulsivity, which is a personality trait, in bariatric surgery candidates with severe obesity .

Methods: Between May 2022 and December 2022, 93 patients aged 18-65 years who were planned for bariatric surgery were applied to Balıkesir University Health Practice and Research Hospital General Surgery outpatient clinic, Hamilton anxiety scale (HAMA), Hamilton depression scale (HAMD), Barratt impulsivity scale (BIS-11), Night Eating Questionnaire (ADL) were applied.

Results: 69 (74.2%) of the participants were women. There was no significant difference between genders in terms of ADL scores (p=0.683). h Night eating syndrome was detected in one third of the patients. (N=31). Barratt -not planning and total scale scores of patients with an ADL score above 25 were found to be higher than those with an ADL score of 25 and below (p=0.010, p=0.044, respectively).

Conclusion: Considering that night eating syndrome is associated with one third of obesity and it is associated with impulsivity, addressing the impulsivity of individuals with overeating in cognitive behavioral therapy before the operation will contribute to the success of the treatment.

Keywords: Night eating syndrome, bariatric surgery, obesity

INTRODUCTION

Obesity is an important public health problem that is increasing rapidly and negatively affecting life by causing disability. Investigating the factors that cause obesity gains importance in terms of detecting preventable conditions. For this reason, studies on detecting conditions that may provide psychiatric predisposition have increased in recent years.[1] The frequency of eating disorders is higher in obese individuals compared to the normal population. Although binge eating disorder draws the most attention for this situation; Other eating attitude disorders such as food addiction, emotional eating, restricted eating and night eating syndrome (NES) are also prominent.[2,3] In the DSM-5, NES is defined under the category of Other Specified Feeding or Eating Disorders, which includes nocturnal eating episodes defined as eating after waking up and/or binge eating after dinner.[4] In a study evaluating night eating syndrome in patients diagnosed with depressive and anxiety disorders, it was determined that the presence of depression and high body mass index were predictors of NES.[5] Another condition that is mentioned in eating disorders and obesity and often accompanies these disorders is impulsivity.[6,7] By definition; acting without thinking, regardless of the possible negative consequences of one's decisions Tendency or rapid response to stimuli was defined as a predisposition to unplanned movements. Although it is not a psychiatric diagnosis on its own, many psychiatric disorders are is one of the core symptoms.[8] There are studies indicating that impulsivity maintains faulty eating behavior in both obese individuals and individuals without obesity and with eating attitude disorders.[9,10] High level impulsivity is thought to be a risk factor contributing to increased, food intake and unhealthy diet.[11] In addition, impulsivity It is stated that obesity also contributes negatively to classical behavioral therapy. From a theoretical perspective Difficulty in adapting to the behavioral changes required for weight loss can be expected from

Corresponding Author: Merve Şahin Can, mervesahin86@hotmail.com

impulsive individuals. Choosing smaller but shorter-term gains rather than long-term gains seen in impulsive individuals tendency may contribute to difficulties in the treatment of obesity in these individuals.[12,13]

Accompanied by this information in the literature; In our study, it is aimed to determine the frequency of night eating syndrome in bariatric surgery candidates with severe obesity and to reveal its relationship with impulsivity, a personality trait that we think may be related. We aim to detect these symptoms to help define the risk factors for post-operative weight regain and to contribute to increasing success in the post-op period.

METHODS

The study was carried out with the permission of Balıkesir University Health Sciences Non-interventional Researches Ethics Committee (Date: 17.05.2022, Decision No: 2022/56). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

The universe of the research; patients between the ages of 18-65 who were planned for bariatric surgery by applying to the General Surgery Polyclinic of Balıkesir University Health Practice and Research Hospital between May 2022 and December 2022. The patients were evaluated in the Mental Health and Diseases outpatient clinic, and written consent was obtained for participation in the study; Hamilton anxiety (HAMA) and Hamilton depression (HAMD) scales were administered by the clinician. Scale scores of 5 and 7 and below, respectively; 93 patients suitable for the study constitute the sample of the study. To the participants; Sociodemographic data sheet, Barratt impulsivity scale (BIS-11), Night Eating Questionnaire (ADL) were applied. As exclusion criteria; mental retardation, pregnancy and accompanying alcohol/substance use disorder were determined.

Clinical Evaluation Scales

Night Eating Questionnaire (DL): It is a screening questionnaire consisting of 14 questions developed by Allison et al.[14] and adapted into Turkish by Atasoy et al.[15] Questionnaire morning appetite and first food intake of the day, evening and night eating, evening rate of food intake after dinner, cravings, night eating behavior The control included questions about difficulty falling asleep, frequency of waking up at night, awareness and mood during night eating. Items other than the 7th item in the questionnaire are five-dimensional. It is scored between 0 and 4 with a Likert- type measurement. Items 1, 4 and 14 are reverse scored. The total score can be between 0-52. Original night eating disorder for a score of 25 and above in the study and night eating disorder for below this score. is not envisaged.

Barratt Impulsivity Scale-11 (BIS-11): Barratt the impulsivity Scale-11 consists of thirty items and is self -contained. It has three, subscales.[16] These scales are; attention (inattention and cognitive disorder), motor (motor impulsivity, impatience) and lack of planning (control of inability to provide cognitive to the confusion intolerance). Barratt impulsivity scale 4 different sub-scores are obtained when evaluating; total score, non-planning, attention and motor impulsivity scores. The higher the total score, the higher the patient's impulsivity. the higher the level. Barratt Impulsivity-11 scale Turkish validity and reliability study made by Gülec, et al.[17]

Statistical Analysis

Package) for statistical analysis of data for the social Sciences) 25.0 package program was used. Categorical measurements were summarized as numbers and percentages, and continuous measurements as mean and standard deviation (median and minimum-maximum where appropriate). Chi-square test was used to compare categorical expressions. Kolmogorow-Smirnov test was used to determine whether the parameters in the study showed normal distribution. Mann Whitney U test was used for the parameters that did not show normal distribution. In determining the relationship between continuous measurement parameters, Spearman's The rho correlation test was used. Statistical significance level was taken as 0.05 in all tests .

RESULTS

The mean age of the patients included in the study was 37.3±11.2 years; The mean preoperative BMI was calculated as 45.7±6.8.

69 (74.2%) of the participants are women. In terms of gender, the ADL score (mean±sd) of women was 22.6±9.9, and 22.9±9.1 for men; There was no significant difference between genders in terms of night eating questionnaire scores (p=0.683)

The total scale scores of the participants are given in Table 1.

Table 1. Mean scale scores of participants

Scales	Mean±SD
Night Eating Questionnaire (DL)	22.7±9.7
Barratt - Not Making a Plan	22.5±5.9
Barratt - Engine	18.0±3.8
Barratt - Caution	14.1±4.2
Barratt - Total	54.1±11.5

No correlation was found between night eating questionnaire scores and age and BMI index of the patients. (p=0.575, p=0.469). When the relationship between ADL scores and impulsivity is examined;

The patients' ADL scores and Barratt -Motor, Barratt -Attention and Total scores were positively (linear) weak (r=0.204; r=0.224; r=0.288); It was determined that there was a positive (linear) moderate correlation with the Barratt -Not Making a Plan score (r=0.314).

Table 2. The relationship between ADL and related parameters

	ADL score	
	r	p
Age	0.059	0.575
BMI preop	-0.076	0.469
Barratt - Not Making a Plan	0.314**	0.002
Barratt - Engine	0.204*	0.049
Barratt - Caution	0.224*	0.031
Total Barratt	0.288**	0.005

* p<0.05, **p<0.001, r: Spearman's rho correlation, +: Chi-square

When the patients were divided into two groups as 25 and above 25 points according to the 25 points accepted as the cut-off value in the original study; night eating syndrome was found in one third of the patients. (n=31). There was no statistically significant difference between the two groups in terms of gender, age and BMI. (p=0.615, p=0.308, p=0.483). It was determined that patients with an ADL score above 25 (the group with night eating syndrome) had higher Barratt -planning and total scale scores than those with an ADL score of 25 and below (p=0.010, p=0.044, respectively). No significant difference was found between the other parameters in Table 3 and the ADL groups (p >0.05).

Table 3. Analysis of clinical variables according to the presence of night eating syndrome

	GYA 25 and below (n =62)	GYA over 25 (n =31)	p
Gender (n(%))			
Woman	45 (72.6)	24 (77.4)	0.615+
Male	17 (27.4)	7 (22.6)	
Age (Mean±Sd)	36.7±11.3	38.6±11.1	0.308
BMI preop (Mean±Sd)	45.9±7.1	45.1±6.3	0.483
Scales	**(Mean±Sd)**	**(Mean±Sd)**	
Barratt -Plan (Av±Sd)	21.2±5.0	24.9±6.8	0.010*
Barratt -Engine (Av±Ss)	17.8±3.8	18.4±3.7	0.316
Barratt -Attention (Av±Sd)	13.5±3.9	15.2±4.6	0.130
Total Barratt (Mean±Sd)	52.1±10.1	58.2±13.1	0.044*

* p<0.05, **p<0.001, Mean±Sd : Mann Whitney U, +: Chi-square

DISCUSSION

After losing weight quickly after obesity surgeries, it becomes important to maintain this weight. In recent years; with the increase in surgery rates; on causes of weight regain (KGA) A lot study carried out, and possible factors were investigated. Lauti et al.[18] summarized the causes of CGA in five main, items : malnutrition; hormonal / metabolic imbalance; factors related to mental health; insufficient physical activity and anatomical surgical factors. Among the factors related to mental health, the continuation of depressive disorders, anxiety disorders and eating disorders are the first reasons that come to mind. Interest in other eating disorders has started to increase, especially after the data on the association of binge eating disorder and obesity. The frequency of night eating syndrome in bariatric surgery candidates can vary in a wide range such as 8.2%-55%, together with the evaluation of the diagnostic criteria and time factor. Baldofski et al.[19] found that the rate of meeting the criteria for night eating syndrome in surgical candidates was 8.2%. These individuals reported emotional eating, eating without feeling hungry, and food addiction symptoms more frequently than other individuals without an eating disorder. In our study, the night eating questionnaire score was found to be above 25 in approximately 1/3 of the surgical candidates, and these patients met the diagnostic criteria for night eating syndrome at the clinical interview. This situation is consistent with the literature. In addition, no difference was found in terms of frequency in men and women, nor was it associated with BMI. Sevinçer et al.[20] found the prevalence of NES to be higher in women in a study conducted with university students. Only the morbid The fact that it consisted of obese individuals may have caused the inability to reveal the relationship with gender and BMI. It is also important to know how much the frequency, which was determined at a rate of one third before the operation, continues after the operation and the related factors. In the flood study, it was observed that 27.6% of the patients experienced NES preoperatively and 10.3% postoperatively.[21] Chang's[22] systematic review _ pass found the rate of NES after surgery to be between 1.9% and 42%. In a study by Ünal et al.[23] those who experience weight regain after bariatric surgeries and those who do not compared to night eating was significantly higher. However, according to hierarchical linear regression analysis results, it was stated that night eating did not predict weight regain. In another study, it was stated that body perceptions were worse after bariatric surgery in people who continued to eat at night after surgery.[24]

Obesity and impulsivity studies have gained momentum in recent years. Significant relationship between impulsivity and disordered eating attitudes known to be impulsive It is associated with excessive food intake and compulsive eating. In rats; high with food addiction impulsiveness relationship between the level is; addiction of delicious foods features of high impulsiveness level of risk factor transferred.[25,26] In addition, impulsivity was interpreted as a predictor of losing weight with diet, gaining weight after treatment,

and discontinuing treatment. in the literature obesity and impulsivity women, obese patients with binge eating disorder, and obese kids over focused.[27-29] In a study evaluating both genders together morbid impulsivity in obese patients higher than healthy controls, no difference was found between non -morbidly obese patients and healthy controls. This result, impulsivity more morbid than non - morbid obese patients may be a condition specific to obese patients. suggests.[30] For this reason, this concept should be investigated more carefully in patients who apply for bariatric surgery with severe obesity. Ryden et al.[31] morbid impulsivity of obese patients after medical and surgical treatment unchanged, that this situation causes weight gain again has reported. Arias et al.[32] morbid binge eating disorder more impulsivity in obese than in those without binge eating disorder has determined. Carrard et al.[33] eating disorder exhibiting and meeting the symptoms of food addiction higher in people who do not meet symptoms impulsiveness indicated. its population In a study of bariatric surgery candidates, a significant relationship was found between food addiction and impulsivity scores. found.[34] Saraçlı et al.[35] Night eating syndrome was admitted to the psychiatry clinic with depression, impulse control disorder and nicotine addiction. applicant found to be common among obese patients. While a positive relationship was found between night eating and impulsivity in our study, individuals diagnosed with night eating had high scores on non-planning from the subscales. we saw. Impulsivity related to not making plans, being main oriented, future considers acting without thinking.[36] Inability to plan; your impulsiveness cognitive It is associated with a deterioration in the direction of gratification and people are more unsuccessful in delaying gratification. Immediate smallpox as a result of inability to plan rewards later, the future is bigger preferable to awards. Therefore, not making plans is obese. may play a key role in the process leading to morbidity.[30] In addition; Nasser et al.[37] a positive correlation between the scores of not planning and loss of control during binge eating in obese patients. has found. Neederkoorn et al.[38] reduce cognitive impulsivity leading to overeating in obese patients. behavioral therapy specifically. He suggested that he should focus on.

CONCLUSION

To summarize the important findings of our study, it was determined that one-third of bariatric surgery candidates had night eating syndrome and that these people had problems especially in the sub-title of impulsivity and not being able to plan. We conclude that future studies investigating the post-operative persistence rates of night eating syndrome and its relationship with impulsivity will contribute to the success of the surgery. However, the cross-sectional nature of our study and the fact that the scales are self-report scales are also limitations of the study.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Balıkesir University Health Sciences Non-interventional Researches Ethics Committee (Date: 17.05.2022, Decision No: 2022/56).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Sarwer DB, Heinberg LJ. A review of the psychosocial aspects of clinically severe obesity and bariatric surgery. *Am Psychol.* 2020;75(2):252-264.
2. Berberoğlu Z, HOCAOGLU C. The global health problem 'obesity': a current review. Journal of Celal Bayar University Health Sciences Institute. 2021;8(3):543-552.
3. Stunkard AJ. Eating disorders and obesity. *Psychiatr Clin North Am.* 2011;34(4):765-771.
4. (APA). APA. Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 5th ed. 2013.
5. Küçükgöncü S, Beştepe E. Night eating syndrome in major depression and anxiety disorders. *Noro Psychiatrist Ass.* 2014;51(4):368-375.
6. Sfera A, Osorio C, Inderias LA, Parker V, Price AI, Cummings M. The obesity-impulsivity axis:potential metabolic interventions in chronic psychiatric patients. *Front Psychiatry.* 2017;8:20.
7. Thamotharan S, Lange K, Zale EL, Huffhines L, Fields S. The role of impulsivity in pediatric obesity and weight status:a meta-analytic review. *Clin Psychol Rev.* 2013;33(2):253-262.
8. Erel Ö, Shadow ZB. The relationship between risky behaviors and childhood abuse, impulsivity and risky behaviors in university students. *Anatolian J Psychiatry.* 2015;16:189-197.
9. Booth C, Spronk D, Grol M, Fox E. Uncontrolled eating in adolescents:The role of impulsivity and automatic approach bias for food. *Appetite.* 2018;120:636-43.
10. Turker SE. The role of impulsivity in the relationship between borderline personality disorder and eating attitudes. Işık University, 2017.
11. Wrzosek M, Sawicka A, Tałałaj M, Wojnar M, Nowicka G. Impulsivity and vitamin D in bariatric surgery candidates. *Pharmacologic Rep.* 2018;70(4):688-693.
12. Allison KC, Wadden TA, Sarwer DB, et al. Night eating syndrome and binge eating disorder among persons seeking bariatric surgery: prevalence and related features. *Obesity (Silver Spring).* 2006;14 Suppl 2:77s-82s.

13. Manasse SM, Flack D, Dochat C, Zhang F, Butryn ML, Forman EM. Not so fast: the impact of impulsivity on weight loss varies by treatment type. *Appetite.* 2017;113:193-199.
14. 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. *Eating Behaviors.* 2008;9(1):62-72.
15. Atasoy N, Saraçlı Ö, Konuk N, et al. The validity and reliability study of the Night Eating Questionnaire-Turkish Form in the psychiatric outpatient population. 2013.
16. Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt impulsiveness scale. *J Clin Psychol.* 1995;51(6):768-774.
17. Güleç H, Ok L, Turhan M, Karakuş G, Zengin M, Stanford MS. Psychometric properties of the Turkish version of the Barratt impulsiveness scale-11. *Bull Clin Psychopharmacol.* 2008;18(4):251-258.
18. Lauti M, Kuaratna M, Hill AG, MacCormick AD. Weight regain following sleeve gastrectomy-a systematic review. *Obes Surg.* 2016;26(6):1326-1334.
19. Baldofski S, Tigges W, Herbig B, et al. Nonnormative eating behavior and psychopathology in prebariatric patients with binge-eating disorder and night eating syndrome. *Surg Obes Relat Dis.* 2015;11(3):621-626.
20. Sevincer GM, Ince E, Taymur I, Konuk N. Night eating syndrome frequency in university students: association with impulsivity, depression, and anxiety. *Bull Clin Psychopharmacol.* 2016;26(3):238-247.
21. Taşkın HE. Effect of bariatric surgery on night eating syndrome:A retrospective study. *Arch Clin Exp Med.* 2022;7(1):1-5.
22. Chang SH, Stoll CR, Song J, Varela JE, Eagon CJ, Colditz GA. The effectiveness and risks of bariatric surgery:an updated systematic review and meta-analysis, 2003-2012. *JAMA Surg.* 2014;149(3):275-287.
23. Ünal Ş, Sevinçer GM, Maner AF. Bariatrik Cerrahi Sonrası Kilo Geri Alımının; Gece Yeme, Duygusal Yeme, Yeme Endişesi, Depresyon ve Demografik Özellikler Tarafından Yordanması *Turk Psikiyatri Derg.* 2019;30(1):31-41.
24. Morrow J, Gluck M, Lorence M, Flancbaum L, Geliebter A. Night eating status and influence on body weight, body image, hunger, and cortisol pre- and post- Roux-en-Y Gastric Bypass (RYGB) surgery. *Eat Weight Disord.* 2008;13(4):e96-e99.
25. Velázquez-Sánchez C, Ferragud A, Moore CF, Everitt BJ, Sabino V, Cottone P. High trait impulsivity predicts food addiction-like behavior in the rat. *Neuropsychopharmacology.* 2014;39(10):2463-2472.
26. Murphy CM, Stojek MK, MacKillop J. Interrelationships among impulsive personality traits, food addiction, and body mass index. *Appetite* 2014;73:45-50.
27. Nederkoorn C, Jansen E, Mulkens S, Jansen A. Impulsivity predicts treatment outcome in obese children. *Behav Res The.* 2007;45(5):1071-1075.
28. Epstein LH, Dearing KK, Temple JL, Cavanaugh MD. Food reinforcement and impulsivity in overweight children and their parents. *Eat Behav.* 2008;9(3):319-327.
29. Guerrieri R, Nederkoorn C, Jansen A. The interaction between impulsivity and a varied food environment:its influence on food intake and overweight. *Int J Obes.* 2008;32(4):708-714.
30. Sarısoy G, Atmaca A, Ecemiş G, Gümüş K, Pazvantoğlu O. The relationship between impulsivity and impulsivity with body image and self-esteem in obesity patients. *Anatolian J Psychiatry.* 2013;14:53-61.
31. Ryden A, Sullivan M, Torgerson J, Karlsson J, Lindroos A, Taft C. A comparative controlled study of personality in severe obesity:a 2-y follow-up after intervention. *Int J Obesity.* 2004;28(11):1485-1493.
32. Arias Horcajadas F, Sánchez Romero S, Gorgojo Martínez JJ, Almódovar Ruiz F, Fernández Rojo S, Llorente Martin F. [Clinical differences between morbid obese patients with and without binge eating]. *Actas Esp Psiquiatr.* 2006;34(6):362-370.
33. Carrard I, Crépin C, Ceschi G, Golay A, Van der Linden M. Relations between pure dietary and dietary-negative affect subtypes and impulsivity and reinforcement sensitivity in binge eating individuals. *Eat Behav.* 2012;13(1):13-19.
34. Hernandez J, Cervoni C, Hymowitz G. The effects of impulsivity on food addiction and eating behaviors in a bariatric sample. *Surg Obes Related Dis.* 2017;13(10):S93.
35. Saraçlı Ö, Atasoy N, Akdemir A, et al. The prevalence and clinical features of the night eating syndrome in psychiatric out-patient population. *Compr Psychiatry*. 2015;57:79-84.
36. Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt impulsiveness scale. *J Clin Psychol.* 1995;51(6):768-774.
37. Nasser JA, Gluck ME, Geliebter A. Impulsivity and test meal intake in obese binge eating women. Appetite 2004;43(3):303-307.
38. Nederkoorn C, Braet C, Van Eijs Y, Tanghe A, Jansen A. Why obese children cannot resist food:the role of impulsivity. *Eating Behaviors.* 2006;7(4):315-322.