

Determinants of Night Eating Syndrome in Bariatric Surgery Candidates

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ABSTRACT:

Determinants of night eating syndrome in bariatric surgery candidates

Objective: In the present study, it was aimed to examine the clinical correlates of Night Eating Syndrome among bariatric surgery candidates and its relationship with depression, anxiety, and eating disorders.

Methods: The study was conducted in a voluntary patient group (n=141) who attend to the Clinic of Bariatric and Metabolic Surgery of Faculty of Medicine of Bezmialem Vakıf University between June 2013 and August 2014 to have obesity surgery. The participants were asked to complete the Night Eating Questionnaire, the Eating Disorder Examination-Questionnaire (EDE-Q), the Beck Depression Inventory, and the Beck Anxiety Inventory. Eligible 111 patients who have completed all the questionnaires were included for statistical analyses.

Results: The results show that 16 participants (14.4%) of the study sample got a score of 30 or over from The Night Eating Questionnaire and according to proposed diagnostic criteria, 8.1% (n=9) of the study sample were identified with Night Eating Syndrome. 22.5% of the sample (n=25) had Binge Eating Disorder. Out of these participants, 43 (38.7%) scored 17 and over from Beck Depression Inventory, and 41 (%36.9) scored 16 and over from the Beck Depression Inventory. While 8.1% (n=9) of sample group met the criteria for both Binge Eating Disorder and Night Eating Syndrome, 65.8% (n=73) met neither Binge Eating Disorder nor Night Eating Syndrome. While 16 patients (14.4%) met the criteria of Binge Eating Disorders but not met ones of Night Eating Syndrome. Moreover, 13 (11.7%) patients who did not meet the criteria for Binge Eating Disorder met the criteria of Night Eating Syndrome.

Conclusion: Our results showed that Night Eating Syndrome was in mutual relationship with psychopathologies such as depression and anxiety. This relationship should be consider in the management of the Night Eating Syndrome. Recognition and proper treatment of Night Eating Syndrome is important due to its possible effect on the outcome of obesity surgery. Follow-up studies are needed to examine the effect of Night Eating Syndrome on weight loss in bariatric surgery groups.

Keywords: night eating syndrome, obesity, bariatric surgery

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INTRODUCTION

Night Eating Syndrome, first described in 1955 by Stunkard as a delay in the circadian pattern of eating and as an eating disorder, has drawn much attention in recent years (1). It has taken place under the title "Other Specified Feeding or Eating Disorder" which is a new diagnostic category in the Diagnostic and Statistical Manual of Mental Disorders - DSM-5. Night Eating Syndrome is characterized by a waking up and eating food after awakening from sleep when they are fully aware (nocturnal eating) and/ or

evening hyperphagia (2). According to diagnostic criteria that were recommended by Allison and Colleagues, Night Eating Syndrome is characterized by at least 25% of daily food eaten after dinner or a nocturnal eating episode of at least twice a week. In addition to these criteria, morning anorexia, a belief that people should eat in order to initiate sleep or to be able to fall back asleep, and depressive mood in the evenings may accompany these episodes (3).

Night Eating Syndrome prevalence in the general population was reported to be approximately 1.1-1.5% (4,5). Although Night Eating Syndrome is also seen in normal

weight individuals, a positive correlation has been identified Night Eating Syndrome and body mass index (BMI) (6-9). While, in obese people who seek treatment, the rate was 4.3-8.9% (10,11), whereas a higher rate of 8.9-55% was found in patients who applied for obesity surgery (12-17). Night Eating Syndrome might lead to weight gain in both normal weight individuals and overweight and obese individuals (18).

One of the proposed diagnostic criteria for Night Eating Syndrome is mood worsening at night and the presence of depressed mood (3). In fact, the relationship between Night Eating Syndrome and major depression has been shown in various studies (19,20). De Zwaan et al. reported that the prevalence of lifetime major depressive disorder in people who have been diagnosed with Night Eating Syndrome as 55.7% and a current major depressive disorder at a rate of 19% (20). Furthermore, Orhan et al. reported that Night Eating Syndrome had a higher rate in people with major depressive disorder than those who were not depressed (32.5% vs. 19.2%) (21).

Night Eating Syndrome is observed at a higher rate in patients in psychiatry outpatient clinics than the general population (9,22,23). In several studies, it was shown that individuals with Night Eating Syndrome have higher rates of substance use disorders and anxiety disorders (24). Although Night Eating Syndrome is overlapping with binge eating disorder at certain points, it is a distinct entity. In the Night Eating Syndrome, the prominent feature is the difference of consumption time rather than consumption of a large amount of food.

Eating disorders including Night Eating Syndrome are commonly seen in bariatric surgery candidates. The results of studies that examine the effect of Night Eating Syndrome prevalence and the existence of preoperative Night Eating Syndrome on the surgical results are inconsistent due to differences in methods used to identify the disorder (25,26). However, the presence of this condition should be screened before surgery, and it is recommended to monitor it after the surgery regarding its potential impact on the results of the surgery (27). After obesity surgery either eating disorders can continue or a new eating disorders might pursue. Nevertheless, screening and evaluation of the presence of Night Eating Syndrome before surgery and monitoring in the postoperative period regarding the negative effect on outcome of surgery is recommended (28).

The results of studies conducted to examine the prevalence of Night Eating Syndrome among candidate

patients for bariatric surgery are inconsistent. Adami et al. reported that 5 out of the 63 patients (8%) were diagnosed with Night Eating Syndrome (15). However, Powers et al. reported this rate as 10% (16). In other studies, the ratio of Night Eating Syndrome vary between 8.9 to 55% according to the evaluation of diagnostic criteria used and duration of the syndrome (22).

Due to the overlapping symptoms, it has been explored that how much of the bariatric surgery patients with Night Eating Syndrome have also been diagnosed with Binge Eating Disorder at the same time. Baldofski, in the study conducted on obesity surgery sample, found the prevalence of Night Eating Syndrome as 8.3% and Binge Eating Syndrome as 4.3%, and 3.9% of patients were diagnosed with both of these disorders (29).

Since Night Eating Syndrome has a relationship with psychiatric disorders including major depressive disorder, binge-eating disorder, and other eating disorders, it is necessary to examine this syndrome in obesity surgery patients. Studies show that Night Eating Syndrome can continue either in obesity surgery patients, or it can emerge even after surgery (28). To the best of our knowledge, no study was conducted to examine the prevalence of Night Eating Syndrome in obesity surgery patients in Turkey. This present study aimed to examine the prevalence of Night Eating Syndrome in bariatric surgery candidates and its relationship with depression, anxiety, and eating disorders.

MATERIAL AND METHODS

Study Participants

The study was conducted in a voluntary patient group (n=141) who attended consecutively to the Bariatric and Metabolic Surgery Clinic of Bezmialem Vakıf University School of Medicine in between the dates of June 2013 and August 2014 to have obesity surgery. Patients completed paper-and-pencil self report questionnaires. Illiterate patients were excluded. Participants were asked to complete Sociodemographic Data Form consists of information about gender, age, total education year, socio-economic status, occupational and marital status. Night Eating Questionnaire, the Eating Disorder Examination-Questionnaire, the Beck Depression Inventory and the Beck Anxiety Inventory were administered. The statistical analyses was performed in 111 patients who have completed

all the questionnaires. This study was approved by the Ethical Committee of Istanbul University Cerrahpasa Medical Faculty. Written informed consents were obtained from the participants following the study protocol was thoroughly explained.

Psychometric and Other Measures

Participants were administered a questionnaire for sociodemographic information. Participants who had missing answers for any items ($n=27$) and illiterate patients ($n=3$) were excluded.

Body Mass Index (BMI): Height and body weight were measured by a nurse. The height and weight were recorded while the participants were wearing light clothing with their shoes removed. Body mass index (BMI) was calculated as the weight in kilograms divided by the height in meters squared. Obesity was defined as a BMI of $\geq 30 \text{ kg/m}^2$.

Sociodemographic Data Form. This form includes demographic variables, including gender, age, marital status, working status, socio-economic status, total education year, height and weight.

Night Eating Questionnaire (NEQ): NEQ, developed by Allison et al., is a 14-item instrument using for the assessment of severity of night eating behaviors. It includes questions about loss of appetite in the morning, night eating, amount of food taken after dinner, food craving, control on the night eating, difficulty falling asleep, frequency of awakening at night to eat, awareness of during night eating, and mood swings. Except for the item 7, it is a five-point Likert-type scale that is scored from 0 to 4. The total score of the scale varies between 0 and 52. We have chosen the cut-off score as ≥ 30 since positive predictive value higher than ≥ 25 as explained in the original study (17). Internal consistency reliability of the scale for original study was 0.70 (17). The scale has been translated into Turkish by Atasoy and colleagues, and it was demonstrated to be a reliable and valid tool for screening Night Eating Syndrome. Cronbach's Alpha (internal consistency) of the scale for Turkish sample has been found to be 0.96 (22).

Binge Eating Disorder Questions: To screen Binge Eating Disorder, participants were asked to complete

questions developed by the authors extracted from SCID-I (for DSM-IV-TR) Eating Disorders Module H. (30).

Eating Disorder Examination-Questionnaire (EDE-Q): The EDE-Q is a 32 item self-report scale that measures behaviors and attitudes towards eating and body image. It maintains the format of the EDE including the four subscales (Restraint, Eating Concern, Weight Concern, and Shape Concern) and global score. It also concerns behaviors over a 28-day period and retains the scoring system of 0-6 (31). The scale was translated into Turkish and validated by Yucel and colleagues. Cronbach's Alpha (internal consistency) of the scale for Turkish sample has been found to be 0.93 (32).

Beck Depression Inventory (BDI): BDI is a 21-itemed self-report scale which measures emotional, somatic, cognitive, and motivational symptoms related to depression. It was developed by Beck and colleagues. The Beck depression inventory is used to measure severity and variations in the intensity of depressive symptoms (33). BDI is adapted, and studies on validity and reliability has been made by Hisli (34). Cut-off score ≥ 17 was determined for presence of depression.

Beck Anxiety Inventory (BAI): BAI is developed by Beck and colleagues and it measures the frequency of anxiety symptoms experienced by individuals. It is a self-report Likert-type scale and each item is scored between 0 to 3 and it consists of 21 items. The total score refers to the rate of elevated anxiety experienced by the individual. In this study cut-off score ≥ 16 was determined for presence of anxiety. The instrument has an excellent internal consistency (0.92) and a high test-retest reliability (0.75) (35). The BAI has been translated into Turkish and its reliability and validity were studied by Ulusoy and colleagues (36).

Statistical Analysis

All variables were screened for the accuracy of data entry, missing values, and homoscedasticity using SPSS version 21 for Windows. Descriptive statistics were reported using means, standard deviations, frequencies, and percentages. In order to test the data distribution, Kolmogorov-Smirnov test was used, and since the data

were not normally distributed, non-parametric methods were used in analysis. To explore the difference between groups, Pearson's Chi-square, and Fisher Exact tests were used for categorical data and Mann-Whitney U-test was used to compare differences between two independent groups when the dependent variable is either ordinal or continuous. To examine the effect of total score of eating psychopathologies on the Night Eating Questionnaire, logistic regression analysis was used. The alpha level of 0.05 was set up to indicate statistical significance.

RESULTS

As it was shown in Table 1 in detail, the average age of 111 participants in the study was 37.6 with a standard deviation of 10.89 and it ranged from 15 to 67. The average height was 166.4 (SD=10.2), the mean weight was 131.5 (SD=23.2) and the average Body Mass Index was 47.39 kg/m² (SD=6.46; range 33.3–67.13 kg/m²). The sample consisted of 83 females (74.8 %) and 28 males (25.2%) participants. The majority of the participants participated in the study were married (57.7%) and 38 (34.2%) were single, 8 (7.2%) participants were divorced, and one (0.9) participant was widowed. The 46.4% percent of the sample was working, 46.4% percent were unemployed, and 10.9% were retired. The detailed demographic characteristics of participants were presented in Table 1.

Participants scored BDI with an average score of 16.41 (SD=12.64, Range=0-51), BAI with a mean score 14.09 (SD=12.77, Range=0-56), EDE-Q with a mean score of 3.04 (SD=1.10, Range=0.56-5.6) and NEQ scale with an average score of 20.387 (SD=8.33, Range=8-48). When we look at the average scores of the participants in the subscales of the EDE-Q scale, Restraint Eating subscale had a mean of 1.93

Table 1: Socio-demographic characteristics of the participants

	n (%)	Mean±SD	Range
Age		37.6±10.89	15-67
Total Education Year		11.8±4.2	4-21
Height		166.4±10.2	148-198
Weight		131.5±23.2	80-195
BMI		47.4±6.5	33.3-67.1
Gender			
Male	28 (25.2)		
Female	83 (74.8)		
Marital status			
Single	38 (34.2)		
Married	64 (57.7)		
Divorced	8 (7.2)		
Widow	1 (0.9)		
Socio-economic Status			
Very poor	4 (3.6)		
Poor	7 (6.3)		
Middle	69 (62.2)		
Good	31 (27.9)		
Working Status			
Working	47 (42.7)		
Unemployed	51 (46.4)		
Retired	12 (10.9)		

(SD=1.64, Range=0-6), Eating Concerns subscale had a mean of 2.08 (SD=1.55, Range=0-5.8), Shape Concern subscale had a mean of 3.74 (SD=1.35), and Weight Concerns subscale had a mean of 3.04 (SD=1.10, Range=0.8-6) (Table 2).

The average scales scores and distribution according to cut-off points 16 participants (14.4%) of the study sample got a score of 30 or over from The Night Eating Questionnaire and according to proposed diagnostic criteria 8.1% (n=9) of the study sample were identified with Night Eating Syndrome. 22.5% of the sample (n=25) has Binge Eating Disorder. Out of these participants, 43 (%38.7) got a score of 17 and over from the Beck Depression Inventory and 41 (%36.9) got a score of 16 and over from Beck Anxiety Inventory (Table 3).

Table 2: Psychometric Scale Scores of the Participants

	n	Mean±SD	Min.	Max.
Beck Depression Inventory	111	16.41±12.64	0	51
Beck Anxiety Inventory	111	14.09±12.77	0	56
Restraint Eating sub-scores of EDE-Q	111	1.93±1.64	0	6
Eating Concerns sub-scores of EDE-Q	111	2.08±1.55	0	5.8
Shape Concerns sub-scores of EDE-Q	111	4.41±1.35	1.12	6
Weight Concerns sub-scores of EDE-Q	111	3.74±1.38	0.8	6
EDE-Q Total Score	111	3.04±1.10	0.56	5.6
NEQ Score	111	20.387±8.334	8	48

EDE-Q: Eating Disorders Examination Questionnaire, NEQ: Night Eating Questionnaire, SD: Standard Deviation, Min: Minimum, Max: Maximum

Table 3: Evaluation of the scales according to their cut-off scores

	n	%
Binge Eating Disorder		
Undiagnosed	86	77.5
Diagnosed	25	22.5
Depression		
<17 No Depression	68	61.3
≥17 Depression	43	38.7
Anxiety		
<16 No Anxiety	70	63.1
≥16 Anxiety	41	36.9
Night Eating Syndrome Diagnosis based on total score of NEQ (≥30)		
Undiagnosed	95	85.6
Diagnosed	16	14.4
Night Eating Syndrome Diagnosis based on proposed diagnostic criteria (Dichotomous evaluation)		
Undiagnosed	102	91.9
Diagnosed	9	8.1

Table 4: The comparisons of variables between groups according to cut-off score of 30 for night eating questionnaire

	NES<30 (n=95)		NES>30 (n=16)		MW	p
	Median	IQR	Median	IQR		
Age	35	31 - 42	35.5	29 - 44.8	758.5	0.990
Total school year	12	8 - 15	11	8 - 13.8	619.5	0.235
Depression	12	5 - 21	25.5	13.3 - 33	437	0.007
Anxiety	9	4 - 18	17.5	10.5 - 23.5	508	0.034
Restraint	1.8	0.4 - 2.8	1.4	0.3 - 4	758	0.987
Eating concerns	1.8	0.4 - 3	3.8	2.2 - 4.2	299	0.000
Shape concerns	4.5	3.1 - 5.4	5.5	4.5 - 6	452	0.010
Weight concerns	3.8	2.4 - 4.8	4.6	3.9 - 5.5	455	0.010
EDE-Q Total	3	2 - 3.6	3.8	3.2 - 4.7	390	0.002
	n	%	n	%	χ ²	p
Sex						
Male	24	25%	4	25%	0.001	0.626
Female	71	75%	12	75%		
Socio-Economic						
Very Poor	9	10%	2	13%	0.184	0.912
Poor	59	62%	10	63%		
Middle	27	28%	4	25%		
Working Status						
Working	38	40%	9	56%	1.491	0.474
Unemployed	45	48%	6	38%		
Retired	11	12%	1	6%		
Marital Status						
Married	38	40%	9	56%	1.481	0.173
Single	57	60%	7	44%		
Depression						
<17 No Depression	64	67%	4	25%	10.358	0.002
≥17 Depression	31	33%	12	75%		
Anxiety						
<16 No Anxiety	63	66%	7	44%	2.994	0.075
≥16 Anxiety	32	34%	9	56%		
Binge eating disorder						
no	77	81%	9	56%	4.828	0.036
yes	18	19%	7	44%		

EDE-Q: Eating Disorders Examination Questionnaire, NES: Night Eating Syndrome

Table 5: Regression analysis for predicting cut-off score of 30 or over from Night Eating Questionnaire

	B	SE	p	OR	95% C.I. for EXP(B)	
					Lower	Upper
EDE-Q Total	-0.76	0.16	0.000	2.13	2.91	1.56
Binge Eating Disorder	0.74	0.60	0.218	2.09	0.65	6.78
Depression	1.38	0.61	0.025	3.97	1.19	13.24
Anxiety	0.13	0.56	0.820	1.14	0.38	3.38

EDE-Q: Eating Disorders Examination Questionnaire, OR: Odds Ratio, CI: Confidence Interval

Psychopathology

While 8.1% (n=9) of sample group meet the criteria for both Binge Eating Disorder and Night Eating Syndrome, 65.8% (n=73) meet neither Binge Eating Disorder nor Night Eating Syndrome. While 16 patients (14.4%) complied with the criteria of Binge Eating Disorders but not met ones of Night Eating Syndrome. Furthermore, 13 (11.7%) patients who did not meet the criteria of Binge Eating Disorder, met the criteria of Night Eating Syndrome.

When comparing NEQ total scores with total scores of other scales, the patients who scored 30 and over in Night Eating Questionnaire also have significantly higher scores in BDI, total score of eating psychopathologies, eating concerns, shape concerns and weight concerns when compared with ones who scored under 30 ($p<0.05$). According to Beck Depression Inventory cut-off scores, patients with a total score of above 30 of Night Eating Questionnaire had a significantly higher rate of depression ($p<0.05$) (Table 4).

Patients with high eating concerns had 2.22 times higher risk of getting over 30 points from the night eating questionnaire ($p=0.004$), and patients with high shape concerns had 2.94 times higher risk of getting over 30 points from the night eating questionnaire ($p=0.005$). According to Beck Depression Inventory cut-off scores, patients with depression had 5.66 times higher risk of getting over 30 points from the night eating questionnaire ($p=0.023$).

The regression analysis results showed that higher EDE-Q total scores predicted 2.13 times higher risk of getting over 30 points from the night eating questionnaire ($p<0.01$). Patients with depression had 3.97 times higher risk of getting over 30 points from the night eating questionnaire ($p=0.025$) (Table 5).

DISCUSSION

The present study is the first study in the Turkey examined the prevalence of Night Eating Syndrome and

related psychopathologies among bariatric surgery candidates. The prevalence of Night Eating Syndrome was found as a rate of 8.4% based on diagnosed criteria determined by Allison and colleagues (3). In the literature, the prevalence of Night Eating Syndrome among bariatric surgery candidates has been reported between the range of 8.9% and 55%. Indeed, when the cut-off scores of NES was determined as 30 in the present study, the prevalence of Night Eating Syndrome increased to 14.4%. Mitchell et al. in their study, assessed the prevalence of Night Eating Syndrome by a scale including three self-report questions related to binge eating in the evening and nocturnal eating (37). In that study, the prevalence of Night Eating Syndrome that is present at least for 3 months was reported to be 17.7% (37).

Baldofski and colleagues have reported the prevalence of Night Eating Syndrome regardless of the duration and frequency criteria as suggested by DSM-5 to be 8.2% and they also reported the prevalence of subsyndromal Night Eating Syndrome as 6.9% (29). In this present study, we found a prevalence for Night Eating Syndrome similar to Baldofski and colleagues reported in their study (29). In a study conducted by Colles and colleagues, Night Eating Syndrome was evaluated based on morning loss of appetite, 50% of food intake after 8:00 pm and sleep problem more than three times a week criteria by a self-report scale, and the prevalence has found to be 19.4% (11). Furthermore, 7.2% of these patients have demonstrated the presence of symptoms of nocturnal eating (11). Rand and colleagues, found the frequency of nocturnal eating in patients with at least once in the last 28 days as 19.6% and reported the prevalence of patients who have nocturnal more than half of 28 days as 6.8% (14). The discrepancy between the results of studies that have reported a higher prevalence (between 31% to 55%) compared to our study can be explained by the retrospective nature of the studies (13,14,38). Lastly, Allison and colleagues reported the prevalence of just night eating to be 3.7%, just nocturnal eating to be 3.3%, and both night

eating as well as nocturnal eating to be 1.9% (3). This difference in the prevalence of Night Eating Syndrome may be associated with the difference in diagnostic criteria and methods that are used as Colles and Dixon also stated in their review study about the prevalence of Night Eating Syndrome (26). Also in this study, the differences found in the prevalence of Night Eating Syndrome may be associated with the difference in diagnostic criteria and methods that are used as Colles and Dixon stated (26).

Night Eating Syndrome demonstrates a heterogeneous nature in terms of comorbidity of binge eating disorder, even whether it is a distinct entity from binge eating disorder has been the subject of research. In this present study, the prevalence of Night Eating Syndrome without binge eating disorder was found to be 11.7% and the prevalence of patients with both diagnosis has been found to be 8.1%. Out of 16 patients diagnosed with Night Eating Syndrome 3 (18.75%) met binge eating disorder criteria at the same time. This result is near to the rate 24.1% has been found in the study of Rand et al. (14). The comorbidity of binge eating disorder and night eating disorders has been found to be 3.9% in the study of Baldofski et al. (29), 4.4% in the study of Colles et al. (26). And these rates were interpreted as binge eating should be considered as a distinct entity. In the present study, we found comorbidity of binge eating disorder and Night Eating Syndrome at a relatively higher rate and this can be due to diagnosing binge eating disorder by self-report measured.

One of the important results of the present study was that depression scores in patients with Night Eating Syndrome was found to be higher compared to the group without Night Eating Syndrome. Additionally, we found that the possibility of getting 30 points in night eating questionnaire was 5.66 times higher for patients with depression. This result reveals a relationship between depressive mood worsening at night criterion of Night Eating Syndrome and Night Eating Syndrome that is comorbid with depression. In the present study, it was found that 38.7% of patients received a score of 17 or over in BDI. Allison and colleagues have found that depression was more frequent in patients with night eating or who eat more in the evening among bariatric surgery patients (3). Similarly, we found that BDI scores of patients with night

eating were significantly higher than of patients without NES. Our results were also similar with the study by Colles and colleagues who reported that depressive symptoms were more often in patients with night eating (26).

In the present study, the anxiety scores of patients with Night Eating Syndrome were significantly higher than patients without NES. Similar to the results of the study conducted by Rand and colleagues patients with night eating not only depression and anxiety but also other psychopathologies were more frequent in general (14). In the present study, total EDE-Q scores which indicate problematic eating pathologies, in general, were significantly higher in the patient group with Night Eating Syndrome. These findings were inconsistent with results of the study conducted by Rand and colleagues in which it was found that the psychopathology of patients with night eating was not different from ones of patients without (14). Similar to our study, Baldofski and colleagues have shown that there was a relationship between symptoms like emotional eating, food addiction and eating without the feeling of hunger and Night Eating Syndrome. Furthermore, Baldofski and colleagues have reported that patients with Night Eating Syndrome did not have restrictive eating in contrast to binge eating disorder (29). In this regard, our results were consistent with their findings. Finally, in conjunction with with depression, receiving higher EDE-Q total scores were the second important factor that determined Night Eating Syndrome.

In conclusion, while depression and anxiety are frequently seen in the bariatric surgery candidates along with eating disorders, the prevalence of Night Eating Syndrome is also noteworthy. The prevalence of Night Eating Syndrome that finds its place under the title of Other Specified Feeding or Eating Disorder in DSM-5 should be considered in two ways. First, since Night Eating Syndrome is in mutual relationship with psychopathologies such as depression and anxiety, it is a necessity to exhibit the appropriate approach in the management of this syndrome. Second, the recognition and proper treatment of Night Eating Syndrome is important due to its effect on the results of obesity surgery. Follow-up studies are needed to examine the effect of Night Eating Syndrome on weight loss in bariatric surgery groups.

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