



Research

Evaluation of Eating Disorders, Eating Attitudes, and Triggers for Weight Gain in Bariatric Surgery Candidates with Childhood Obesity

Çocukluk Çağı Obezitesi Öyküsü olan Bariyatrik Cerrahi Adaylarında Yeme Bozuklukları, Yeme Tutumu ve Kilo Alma Tetikleyicilerinin Değerlendirilmesi

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ABSTRACT

Objective: Disordered eating among bariatric surgery candidates is common and associated with comorbid diseases. But the relationship with childhood stories is not known very well. Therefore, we sought to determine the properties of disordered eating and childhood obesity in bariatric surgery candidates.

Methods: The sample comprised 69 female and 16 male bariatric surgery candidates. Individuals were categorized as having childhood obesity or not. The groups consisted of 40 (33 female, 7 male) bariatric surgery candidates with childhood obesity and 45 (36 female, 9 male) bariatric surgery candidates without childhood obesity. All bariatric surgery candidates were examined by a psychiatrist for eating disorders. The eating attitude test was applied to all groups.

Results: 49.4% of the total 85 bariatric surgery candidates (n=42) identified any kind of trigger factor. Eating attitudes, rate of eating disorders, and trigger factors for morbid obesity were similar in both groups. The rate of type 2 diabetes was higher in bariatric surgery candidates without childhood obesity (57.8% vs. 30.0%, p=0.010). This group was older than bariatric surgery candidates with a childhood obesity story (41.8±7.7 vs. 33.6±9.1, p=0.000). There was no statistically significant difference between groups in familial obesity story (p=0.700).

Conclusion: The absence of a history of childhood obesity in bariatric surgery candidates appears to be associated with type 2 diabetes. Healthy eating habits and preventive measures for obesity must be put into practice.

Keywords: Bariatric surgery, childhood, eating disorder, obesity

ÖZ

Amaç: Bozulmuş yeme paterni bariyatrik cerrahi adaylarında oldukça sıktır ve komorbid hastalıklarla ilişkilidir. Ama çocukluk çağı obezitesi öyküsü ile ilişkisi pek bilinmemektedir. Bu nedenle bariyatrik cerrahi adaylarında bozulmuş yeme davranışıyla ilgili özellikleri ve çocukluk çağı obezitesi öyküsünü araştırmayı hedefledik.

Gereç ve Yöntem: Örnekleme 69 kadın ve 16 erkek bariyatrik cerrahi adayını kapsamaktaydı. Katılımcılar çocukluk çağı obezite öyküsü olanlar ve olmayanlar şeklinde kategorize edildi. Gruplar çocukluk çağı obezitesi olan 40 (33 kadın, 7 erkek) bariyatrik cerrahi adayından ve olmayan 45 (36 kadın, 9 erkek) bariyatrik cerrahi adayından oluştu. Bariyatrik cerrahi adayları yeme bozuklukları açısından bir psikiyatrist tarafından değerlendirildi. Tüm gruplara yeme tutumu testi uygulandı.

Bulgular: Toplam 85 bariyatrik cerrahi adayının %49,4'ü (n=42) herhangi bir tetikleyici faktör tanımladı. Örnekleminizde yeme tutumu, yeme bozukluğu oranı ve morbid obeziteyi tetikleyen faktörler her iki grupta benzer bulundu. Tip 2 diyabet oranı çocukluk çağı obezitesi öyküsü olmayan bariyatrik cerrahi adaylarında daha yüksek bulundu (%57,8'e karşı %30,0, p=0,010). Bu grup çocukluk çağı obezitesi öyküsü olan bariyatrik cerrahi aday grubundan daha yaşlıydı (41,8±7,7 vs. 33,6±9,1, p=0,000). Ailede obezite öyküsü açısından gruplar arasında belirgin bir istatistiksel farklılık yoktu (p=0,700).

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Sonuç: Bariyatrik cerrahi adaylarında çocukluk çağı obezite öyküsünün olmaması ile tip 2 diyabet ilişkili görünmektedir. Sağlıklı beslenme alışkanlıkları ve obeziteyi önleyici girişimler hayata geçirilmelidir.

Anahtar Kelimeler: Bariyatrik cerrahi, çocukluk çağı, yeme bozukluğu, obezite

INTRODUCTION

Recently, the prevalence of obesity has increased worldwide (1). Therefore, eating habits and eating disorders attracted clinicians' attention excessively. The relationship between eating disorders and obesity is often researched by clinicians (2,3). In particular, podiatrists and endocrinologists are interested in obesity and the development process of children. Eating disorders such as binge eating, unhealthy dieting, and purging are very common in obese adolescents (4).

The prevalence and incidence of eating disorders may vary across clinical samples and communities. Industrialization period, change in eating habits, city life, media, and cultural factors may affect the rate of eating disorders (5). Different factors have been blamed for eating disorders. Childhood trauma, obesity, high-level occupation of food and eating, over evaluation of weight and shape, restricted dieting, familial functionality, and familial story of eating disorders are related to the development of eating disorders (6).

As food and eating have a cultural and genetic basis, they interact and are passed on from generation to generation. In particular, the family environment has an important effect on the formation and progression of eating disorders. Abnormal eating attitude is a predictive factor of eating disorders (7). In the first years of life, people meet their nutritional needs by getting help from others. Usually, caregiver of baby is notably mother and other family members. Therefore, family circle is an important factor in eating and the development of eating habits through learning and genetic effects. A recent study from Türkiye draws attention to this issue and evaluates parents and grandparents' feeding practices on children (8). Obesity also has genetic aspects. Children with severe obesity and/or children with a family history of obesity are at risk of adult obesity (9).

In some cases, obesity is a process that starts in childhood and extends into adulthood. This process may reduce life expectancy due to the emerging risks of comorbid medical diseases [type 2 diabetes mellitus (DM), hypertension, cardiovascular diseases, non-alcoholic fatty liver disease, obstructive sleep apnea, dyslipidemia, some types of cancer, and menstrual irregularities] in childhood, adolescence, or adulthood. Some authors are assertive about childhood obesity and describe obesity as a "pediatric disease" (10).

For this reason, bariatric surgery is being discussed as a treatment method and has started to be applied in a limited manner in properly selected adolescent cases (11).

In Türkiye, the risk of morbid obesity appears to be increasing on the contemporary cultural stage. Thus, bariatric surgery methods have become more popular and the number of bariatric surgery candidates (BSCs) is increasing day by day. From this point of view, we evaluated the relationship between childhood obesity story, eating disorders, and eating attitudes in BSCs. The relationship between childhood and disordered eating behavior in adult BSCs has not been adequately studied. Our main goal was to investigate whether childhood obesity makes a difference among BSCs. The hypothesis of this study is that eating disorders and unhealthy eating habits are more common in BSCs with childhood obesity.

METHODS

This study was approved by the Ethics Committee of University of Health Sciences Türkiye, Zeynep Kamil Women and Children Diseases Training and Research Hospital (decision no: 106, date: 27.06.2018). The research was conducted in accordance with the Helsinki Declaration as revised in 1989.

Procedures

BSCs admitted to University of Health Sciences Türkiye, Haydarpaşa Numune Training and Research Hospital were evaluated at pre-surgical psychiatric interviews. The study was conducted during bariatric surgical procedures. All BSCs were examined by a general surgeon, dietitian, and endocrinologist before a psychiatrist. BSCs who agreed to participate in the study and gave written informed consent were consecutively included in the study. All patients were evaluated by the same psychiatrist in a single session. Session took about 50 minutes. First, the sociodemographic form, body mass index (BMI) calculation, and psychiatric examination were performed. Second, BSCs completed self-tests. Data about medical diseases were collected from patients' histories, medical records, and relatives of BSCs. Childhood obesity was noted according to patient's or relative's statements and could not be confirmed from patient files in all BSCs. Data about eating habits and triggers of obesity were collected with open-ended questions.

Participants

The inclusion criteria were super-obese patients (BMI >50 kg/m²), morbidly obese (BMI >40 kg/m²), or severely obese patients (BMI 35-40 kg/m²) with at least one comorbid medical status. Exclusion criteria were being under the age of 18 years or older than 60 years, illiteracy, being visually handicapped, diagnosis of psychosis, mental retardation, history of neurologic diseases, for example dementia, or the presence of any condition affecting the ability to complete the assessment. Ninety-two BSCs were invited to participate in the study. One patient was excluded due to a diagnosis of mental retardation, and six patients were rejected from the study.

BSCs were divided into two groups: BSCs with childhood obesity stories and BSCs without childhood obesity stories.

Materials

Sociodemographic form: This form was developed for this study and included questions regarding gender, age, education level, marital status, employment status, eating disorders, family history of psychiatric disorders, medical diseases, medical treatment, childhood obesity etc. Forms were filled by a psychiatrist during the psychiatric examinations with the help of patients' or relatives' statements.

BMI: Height and weight were measured using a stadiometer and an electronic scale to calculate BMI.

Eating attitude test (EAT): EAT-40 was introduced by Garner and Garfinkel (12) and consisted of 40 items with a six-point (Always, Very Often, Often, Sometimes, Rarely, Never) likert scale. It was developed to identify adolescents with eating disorders and measure the symptoms of anorexia nervosa. It is a self-report test. For items 1, 18, 19, 23, 27, 39, "sometimes" 1 point, "rarely" 2 points, "never" 3 points, and "other options" 0 points. The total score of the scale is obtained by adding the scores obtained from each item of the scale. The cut-off score for the scale is 30. According to the evaluation scale of EAT-40, people with a score of "≥30" were described as "prone to eating behavior disorder". It was adapted to Turkish by Savařır and Erol (13). The reliability coefficient of EAT-40 was 0.65. Internal consistency calculated by Cronbach's alpha was 0.70. High scores indicate higher level of pathology.

Night eating questionnaire (NEQ): This is a screening questionnaire developed by Allison et al. (14) and consists of 14 questions. It is a self-report test. The questionnaire includes questions about morning appetite and first food

intake of the day, evening and night eating, rate of food intake after dinner, cravings, control over night eating behavior, difficulty falling asleep, frequency of waking up at night, and awareness and mood during night eating. The first nine questions in the questionnaire are answered by all participants. Participants who do not wake up at night or do not have a snack are warned not to continue in the next questions. Questions 10-12 are answered by the participants who have night awakenings, and questions 13 and 14 are answered by the participants who have night snacks. Total score ranges from 0 to 52. The cut-off point is 25. This was adapted by Atasoy et al. (15) to Turkish.

Current and/or past eating habits or eating disorders were detailed in the psychiatric examination. Psychiatric disorders were diagnosed by psychiatric examination based on the diagnostic and statistical manual of mental disorders-5 (16). Night eating syndrome was diagnosed by having ≥25 points in the NEQ. Emotional eating was evaluated with open-ended questions such as "Do you think that your overeating behavior is related to your feelings?" and "Do you have excessive eating because of positive/negative affects unrelated to meals or feeling hunger?". No questionnaire was used to evaluate emotional eating. Similarly, no questionnaire was used to evaluate grazing. It was asked to BSCs as "Graze eating is defined as repetitive, unplanned eating of small amounts of food throughout the day. Do you have these eating habits?"

Existence of childhood obesity was evaluated with an open-ended question of "Did you have childhood obesity before adolescence?" Trigger factors for obesity were asked with open-ended questions such as "Did you experience any rapid weight gain? What was the reason/trigger? Pregnancy delivery? Medication? Give up exercise? Loss (in term of psychiatric)? Other factors?"

Statistical Analysis

Data were analyzed with descriptive statistics such as frequency, percentage, average, and standard deviation using SPSS 15.0. The normal distribution assumption of all variables was evaluated using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Demographic variables were compared between groups using the chi-square test (to compare whether there is a dependency between the variables) or independent t-tests (comparing means between two independent groups) as indicated. The Mann-Whitney U test was used for ordinal and nonparametric continuous variables. All statistical analyses were two-tailed and used a 0.05 level of significance.

RESULTS

Forty (33 female, 7 male) BSCs with childhood obesity and 45 (36 female, 9 male) BSCs without childhood obesity were included in this study. BSCs with childhood obesity were younger than BSCs without childhood obesity. There was a statistical difference in marital status between the two groups. The general characteristics of the groups are shown in Table 1.

There was no statistically significant difference between groups in familial psychiatric history ($p=0.416$). The rate of psychiatric history was statistically higher in BSCs without childhood obesity than in BSCs with childhood obesity (60.0% vs. 32.5% respectively, $p=0.011$). The rate of eating disorders was 37.5% in BSCs with childhood obesity and 42.2% in BSCs without childhood obesity ($p=0.657$). Also, no statistical difference was found between the groups in the distribution of past eating disorders ($p=0.485$).

The rate of eating disorders in BSCs with childhood obesity was 35% ($n=14$), and in BSCs without childhood obesity was 31.1% ($n=14$). Rates were similar in these groups ($p=0.703$). No statistical significant difference was found in the distribution of eating disorders types between groups (Table 2).

There was no statistically significant difference between groups in familial obesity history ($p=0.700$).

The rate of comorbid medical states was statistically higher in BSCs without childhood obesity than in BSCs with childhood obesity (84.4% vs. 52.5% respectively, $p=0.001$). The rate of type 2 DM was statistically higher in BSCs without childhood obesity than in BSCs with childhood obesity (57.8% vs. 30.0% respectively, $p=0.010$).

There was no statistically significant difference between the groups in hyperlipidemia, hypertension, thyroid disorders, polycystic over syndrome, and other medical status. There was no statistically significant difference between groups in multiple medical diseases ($p=0.144$).

The rate of treatment for comorbid medical states was statistically higher in BSCs without childhood obesity than in BSCs with childhood obesity (75.6% vs. 50.0% respectively, $p=0.015$).

Of the total 85 BSCs ($n=42$) identified any kind of trigger factor. The rate of trigger for obesity occurrence was statistically higher in BSCs without childhood obesity than in BSCs with childhood obesity (60.0% vs. 37.5% respectively, $p=0.038$). Rate of trigger factors for obesity occurrence in total group were pregnancy-maternity ($n=21$) 24.7%, menopause ($n=4$) 4.7%, grief ($n=1$) 1.2%, other factors (retirement, sedentary life, medical treatment, medical status) ($n=15$) 17.6%. No statistical difference was found between the groups in the distribution of trigger types of occurrence for obesity ($p=0.139$).

Table 1. Sociodemographic properties of bariatric surgery candidates with and without childhood obesity

	Childhood obesity (+) (n=40) Mean, %	Childhood obesity (-) (n=45) Mean, %	p-value
Age*	33.6±9.1	41.8±7.7	0.000
BMI*	45.7±4.5	45.2±4.5	0.610
EAT*	24.7±8.3	23.3±8.27	0.427
Gender**	Male	17.5%	20.0%
	Female	82.5%	80.0%
Marital status**	Single	42.5%	15.6%
	Married	55.0%	73.3%
	Divorced	2.5%	11.1%
Education level**	Primary school	12.5%	24.4%
	Secondary school	15.0%	11.1%
	College	32.5%	31.1%
	University	40.0%	33.3%
Employment status**	Employed	40.0%	57.8%
	Unemployed	60.0%	42.2%
Eating disorders**	35.0%	31.1%	0.703

BMI: Body mass index, EAT: Eating attitude test, *Independent sample t-test, **Chi-square tests, $p<0.05$

Table 2. Distribution of eating disorders among groups

	Childhood obesity (+), %	Childhood obesity (-), %	p-value
Bulimia	0.0%	2.2%	0.268
NES	2.5%	4.4%	
Binge eating disorder	7.5%	15.6%	
EE	2.5%	6.7%	
EE + NES	2.5%	0.0%	
Binge eating disorder + EE	2.5%	0.0%	
Binge eating disorder + NES	7.5%	2.2%	
Bulimia + NES	5.0%	0.0%	
Binge eating disorder + NES + EE	5.0%	0.0%	
Grazing	35.0%	22.2%	0.191

NES: Night eating syndrome, EE: Emotional eating, chi-square tests, $p < 0.05$

95.3% of the total 85 BSCs ($n=81$) reported any kind of weight-loss attempt (diet, exercise, acupuncture and combined methods). There was no difference between the groups in the types of weight-loss attempt ($p=0.583$).

DISCUSSION

The major results of the study were higher rates of comorbid medical diseases, medical treatment, and psychiatric disorders in the BSC without childhood obesity group. When the other results of the study were reviewed, it was noticed that BSCs without childhood obesity were older than those with childhood obesity. Generally, being old brings some risks in terms of chronic medical diseases and psychiatric disorders. The relationships between obesity and several age-related diseases are poorly understood about causality and biological mechanisms (17-19). Risks of cardiovascular problems, hypertension, and metabolic problems increase with age (20). Our study results pointed to similar occasions.

In our study, type 2 DM stands out among other medical diseases. The rate of type 2 DM was higher in BSCs without childhood obesity. This was an unexpected result for our study. However, our study did not include medical records of childhood obesity data in all BSCs. Our results were mostly based on individual reports. Some data suggest that malnutrition in intrauterine life or early childhood predisposes patients to adult-onset diabetes (21). We do not have no data about malnutrition or cachexia in the childhood period of BSCs in our study. Also, many research results in the literature point to the high incidence of type 2 DM in the general population. Obesity is an important risk factors for type 2 DM. Old age is another risk factor for type 2 DM. The prevalence of type 2 DM increases with age

in both male and female genders (22). Determinants such as older age, abdominal obesity, low physical activity, and hypertension have been discussed for hyperglycemia (23). Genetic factors are also effective in the occurrence of type 2 DM. Some genetic profiles, for example, Asian populations are more vulnerable to obesity and exhibit higher risks for type 2 DM under comparable living conditions than others (24).

In this study, eating attitudes of the BSCs were assessed using EAT. EAT scores, rate of eating disorders, distribution of eating disorders, and unhealthy eating habits did not differ between groups in our study. In BSCs with childhood obesity, an almost impaired eating attitude is assumed to be an acquired behavior in childhood. It seems that many chronic diseases or high rates of DM diagnosis may affect eating attitudes and disturb eating attitudes in BSCs. eating patterns, such as the amount of salt, sugar, or fat intake, are associated with many non-communicable diseases (25-27). Also, EAT mostly evaluates anorexia nervosa, and people with anorexia nervosa do not require bariatric surgery, but anorexia-like presentations may be seen after bariatric surgery (28). So both of two groups had cut-off scores in EAT (Table 1).

Obesity is caused by both genetic and environmental factors. Although no relationship was found between childhood obesity history and eating disorders in BSCs by this study, there is some related evidence in the literature. For example, emotional binge eating was found to be higher in obese children in a study (29). We believe that the recall factor of BSCs related to childhood obesity has affected our study results. Keeping childhood health records and childhood follow-up processes more stringent will make it easier for us to understand the relationship between childhood obesity

and adult obesity. The prevalence of obesity in childhood is increasing, and it is an important health problem in our country and all over the world (30). The most important causes of obesity in children and adolescents are the weight status of parents, lack of physical activity, and eating foods resulting in excessive energy intake. Among these factors, those related to behavioral attitudes seem to be more easily changed (31,32).

There is a gap in the literature regarding the relationship between childhood obesity and eating attitude in BSCs. Our study results reached some conclusions that shed light on this gap. This study has several limitations. First, the "childhood obesity" concept is mostly based on the declaration of BSCs. It was not documented from medical records in all BSCs. Some measures were self-reported; thus, the results may not reflect the participants' actual eating attitudes. Second, unknown total duration of obesity, unmatched age of groups, and unequal ratio of women to men are other limitations. Third, the small sample size and cross-sectional design are disadvantages of the study. Follow-up studies will illuminate the problem further. Thus, these factors limit the generalizability of the study results.

CONCLUSION

In conclusion, preventive methods such as lifestyle changes, high physical activity, and a healthy diet should be recommended to obese children. "Family" and "nursery" which personalize and teach us many things first, should bring us healthy eating habits. Preventive forethoughts are put into practice immediately in health and education politics.

ETHICS

Ethics Committee Approval: This study was approved by the Ethics Committee of University of Health Sciences Türkiye, Zeynep Kamil Women and Children Diseases Training and Research Hospital (decision no: 106, date: 27.06.2018). The research was conducted in accordance with the Helsinki Declaration as revised in 1989.

Informed Consent: BSCs who agreed to participate in the study and gave written informed consent were consecutively included in the study.

Authorship Contributions

Surgical and Medical Practices: M.Z.E., M.G.L., Concept: M.Z.E., M.G.L., Design: M.Z.E., Data Collection or Processing: M.Z.E., Analysis or Interpretation: M.Z.E., M.G.L., Literature Search: M.Z.E., M.G.L., Writing: M.Z.E., M.G.L.

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