Austin Journal of Surgery

Open Access

Austin Publishing Group

Research Article

Identification and Association of Obese Patients Seeking Bariatric Surgery with Lifestyle and Eating Patterns: One-Year Observational Study in Italy and Proposal of Eating-Pattern Based Decision-Making Process

Angelo Iossa*, Alberto Di Biasio, Ilenia Coluzzi, Maria Chiara Ciccioriccio and Gianfranco Silecchia

Department of Medical-Surgical Science and Biotechnology, University of Rome, Italy

***Corresponding author:** Angelo Iossa, Department of Medical-Surgical Science and Biotechnology, Sapienza University of Rome, Italy

Received: September 15, 2020; **Accepted:** October 05, 2020; **Published:** October 12, 2020

Abstract

Purpose: This study sought to analyze and document the demographic characteristics, eating behaviors/patterns, and lifestyle habits of obese population seeking bariatric surgery in Italy. It also documented the personal decision-making process of obese people desirous of bariatric surgery at a leading medical center in University of Rome in Italy.

Methods: Patients evaluated for primary bariatric surgery consecutively in a year were screened using the standard nutritional protocol that comprised three sessions. In 1st session, nutritional anamnesis, anthropometric data and 7-day diary (7dR) prescription were observed. In 2nd session, diet prescription was done, and in 3rd session, final assessment of patients was carried out. Non-adherence to dietetic protocol (drop-out or < 5% Weight Loss (WL)), Binge Eating Disorders (BED) and Nocturnal Eating Disorders (NED)) were considered as temporary contraindications.

Results: A total of 219 (52 male, 167 female) patients having mean age of 44.9 years and a mean BMI of 41.3 kg/m2 were scheduled for surgery. Sixteen patients were class I obese, 86 class II, 58 class III, 47 class IV and 12 super obese. Only 5% (n=11) patients did regular physical activity. The mean number of meals taken was five with mean daily/calories of 2629 ± 419, including 36% in fats and 53% in carbohydrates. The standard protocol reported the following (breakup of patients) results: 8.9% drop-out, 5.1% of patients had NED/BED, 17.8% patients had < 5% WL, 1.8% patients showed poor adherence to dietetic protocols, while 80.3% were compliant.

Conclusion: Population seeking bariatric surgery reported improper nutritional behaviors with high calories intake, no regular physical activity and eating disorders (e.g., NED/BED in 5.1%). Standard educational and nutritional protocol taking care of all the population's peculiarity could help the patients rightly change their habits and facilitate the clinicians in indicating the best intervention.

Keywords: Eating disorders; Obesity; Nutrition screening; Epidemic; Bariatric surgery

Introduction

The prevalence of obesity has reached epidemic proportions all over the world. The World Health Organization (WHO) data reported that, in 2016, around 30% of adult population worldwide (11% of men and 15% of women) were obese [1].

Similarly, in Italy, according to the 2016 Osservasalute report and the results of the ISTAT Multiscope Survey "Aspects of daily life", more than a third of adult population (35.3%) was overweight in 2015, while 9.8% of the population (one out of every ten people) was obese; overall 45.1% of adult subjects were overweight [2]. Several behavioral mechanisms such as high caloric and fatty intake, eating out more frequently, consuming fast foods, higher intake of sugar drinks and some eating disorders affect the prevalence of obesity [3-6]. Morbid obesity can be effectively treated *via.* bariatric surgery because it generally results in a substantial and stable weight loss, but this treatment approach is underused, considering that only 1.4% of obese population prefers surgical solution [7]. International guidelines emphasize the role of multi-disciplinary team for bariatric surgery in order to improve patient's assessment, co-morbidities management and education [8]. The decision-making process based on patient's characteristics, eating patterns and co-morbidities poses a challenge, and during the last decade, several flowcharts and algorithms have been proposed to improve patient selection and long-term efficacy of bariatric procedures without a standard, shared approach [9-13].

The proposed nutritional interventions before bariatric surgery aim to achieve a weight loss between 5% to 15% of the excess weight and evaluate meal patterns and eating disorders in parallel with

Citation: Angelo I, Alberto DB, Ilenia C, Maria Chiara C and Gianfranco S. Identification and Association of Obese Patients Seeking Bariatric Surgery with Lifestyle and Eating Patterns: One-Year Observational Study in Italy and Proposal of Eating-Pattern Based Decision-Making Process. Austin J Surg. 2020; 7(4): 1255.

mental health [8,9,14-16].

Thus, the aim of this retrospective study was to analyze demographic characteristics, eating patterns and lifestyle habits of obese people seeking bariatric surgery at the Bariatric Centre of Excellence IFSO-EC, Italy and report the associated personal-surgical managing decision-process.

Methods

All the patients seeking bariatric surgery in 2019 were retrospectively screened from a prospectively-maintained database in order to include those asking for primary bariatric procedures. Exclusion criteria were revisional surgery, metabolic surgery, endoluminal procedures, low BMI (<30 kg/m^2 to 35 kg/m^2), age of adolescents (<21 years), elderly (over 65 years), conversion to open surgery, reoperation due to perioperative complications, concomitant procedure excluding hiatal hernia repair, vegetarian habits, and religion-based eating pattern. All patients had a multidisciplinary preoperative evaluation in line with the standard national and international guidelines [8,17]. The session-wise counselling by the Center's dietician was structured as follows:

1st session: Weight history, previous diet attempts (types, duration and possible concomitant drug administration), physical activity and lifestyle habits, food intake modality (greed, chewing and distribution of meals, etc.), water intake, bowel habit together with anthropometric measures (such as body weight, waist and hip circumferences and BMI) were collected. Then, a 7-day diary (7dR) was prescribed after analyzing detailed information about the choice of foods and beverages of the patients. Food diary and 24-hour dietary recalls were used to detect energy intake (total and average calories/day), protein (g/kg ideal weight/day), carbohydrates (quantity, quality and distribution during the day), lipids and cholesterol, fibers, water and sugary drinks (coffee, fruit juice, coke and similar), and alcoholic beverages.

2nd session: Based on the patient's BMI and eating habits, a personal customized diet plan was created in absence of accepted standard protocol. Low Calorie Diet (LCD), Very Low-Calorie Diet (VLCD) or Very Low-Calorie Ketogenic Diet (VLCKD) were prescribed for the next 2 weeks [17]. The LCD is a diet of about 1000 kcal/day to 1200 kcal/day with 1 to 1.3 grams per kilogram (kg) body weight per day (g/kg/d) of protein; the VLCD is a diet of about < 800 kcal/day with 1.4 g/kg/d of protein; and the VLCKD is a diet of about 600 kcal/day to 700 kcal/day with <0.5 g/kg/d of carbohydrate and 1.2 g/kg/d of protein. Nutrient supplementation was prescribed based on relative deficiencies and checked under medical supervision [18].

3rd session: Final assessment was carried out in this session, and data were discussed in a multidisciplinary session involving dietician, surgeon and psychologist.

The mean interval among the sessions was planned in two weeks (range 1 to 3) with an estimated comprehensive time of 5 weeks. Nocturnal Eating Disorder (NED) and Binge Eating Disorders (BED) were diagnosed using Night Eating Diagnostic Questionnaire (NEDQ) and Binge Eating Scale (BES), respectively [19,20]), by the psychologic group during the pre-operative work-up (3 sessions in the same dietary/dietetic evaluation-time) and [21]. Non-adherence to dietetic protocol (drop-out or < 5% WL), BED and NED were considered as temporary contraindications to bariatric surgery. Each patient variable was analyzed to report the obese population's characteristics. Furthermore, a proposal of eating behavior decision-making process was formulated after considering the population's characteristics and recommendations by a multidisciplinary team.

All data were described in terms of mean ± standard deviation (range, frequencies and/or percentages as appropriate). Numerical variables of different groups were compared using Student's t-test for independent samples. Various variables were correlated using Pearson's product moment correlation equation or Spearman's rank correlation based on variable distribution. p value < 0.05 was considered statistically significant. Statistical analyses were performed using STATISTICA 10.0 software (Stat Soft Inc., Tulsa, OK 74104, USA) for Microsoft Windows.

Results

After initial evaluation of 320 patients for obesity, 292 (91.2%) were scheduled for pre-bariatric work-up in the bariatric program. Seventy-three patients (25% of total population) were excluded from the analysis due to the following reasons: 26 patients were drop-outs (8.9%), 32 required revisional surgery, 12 were NED-affected, and 3 were BED-affected (5.1%). Finally, 219 (52 men, 167 women; 75% of the population) obese patients (with mean age 44.9 years ± 11.9 years; mean BMI of 41.3 kg/m^2 ± 4.9 kg/m^2 ; Waist/Hip Circumference Ratio (WHR) of 0.93 ± 0.1) were scheduled for bariatric surgery. Sixteen patients were class I obese (7.3%), 86 class II (39.2%), 58 class III (26.5%), 47 class IV (21.5%) and 12 were super obese (BMI > 50 kg/m2)(5.4%). The predominant proportion of patients (N=172; 78.5%) originated from Central Italy where our research and surgery center is located. Patient's distribution in terms of comorbidities was as follows: 38 (17.3%) with dyslipidemia; 2 (0.90%) with Obstructive Sleep Apnea (OSAS); 27 (12.3%) with Type II Diabetes Mellitus (T2DM); 105 (47.9%) with Hypertension (HTN); and 144 (65.7%) with symptomatic Gastro-Esophageal Reflux Disease (GERD)). Based on 7dR, the mean registered number of meals was 5 ± 1 with a mean daily/calories intake of 2629 ± 419, including 76 g ± 14 g of protein, 36% ± 4.4% in fats and 53% ± 3% in Carbohydrates (CHO%). The patients consumed a mean of 1.5 L of water/day (range 0.5 L to 3 L). All the included patients consumed a mean of 2.4 sugar beverages/

Table 1: Characteristics of study population.

Number of patients (N)	219
Sex (M/F)	52/167
BMI (M ± SD)	41.3 ± 4.9 kg/m^2
BMI Class (N- class-%)	16-class I obese-7.3 %, 86-class II-39.2%, 58-class III-26.5%, 47-class IV-21.5%, 12-superobese-5.4 %
Number of meal/day (M ± SD)	5 ± 1
Calories/day (M ± SD)	2629 ± 419
Sugar beverages/day (M)	2.4
Carbonated beverages/day (N-%)	113 - 51.6%
Gram of protein/day (M ± SD)	76 ± 14
% fats (M ± SD)	36 ± 4.4
% carbohydrates (M ± SD)	53 ± 3
Regular physical activity (N-%)	69-31.5%

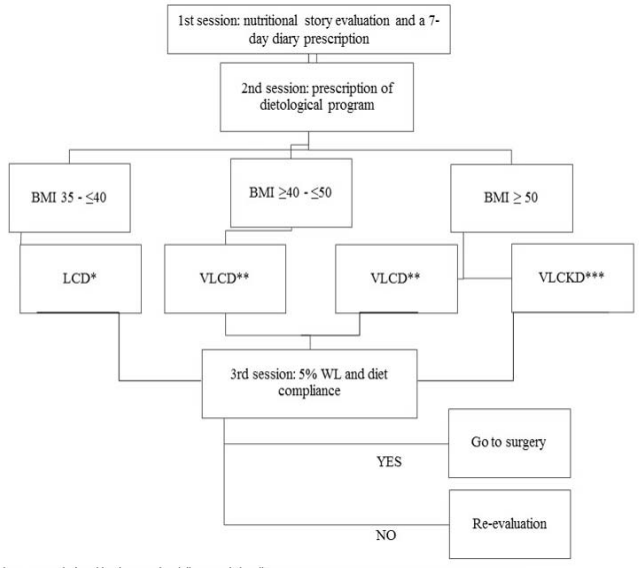

Figure 1: Pre-surgical nutritional protocol and diet prescription diagram *Low calorie diet **Very low-calorie diet ***Very low ketogenic diet.

day (range 0 to 10) for mean 5.4 days/week (range 0 to 7), 113 (51.6%) consumed carbonated drinks daily, and 80 (36.5%) consumed alcoholic drink routinely (range 1 to 3 times/week). Regarding the physical activity, 69 (31.5%) patients did not report any activity, while only 11 (5%) did physical activity once-twice a week. Out of the 187 women, 120 (64%) had pregnancy (range 1 time to 3 time) four years (median time) before bariatric consultation. Study population characteristics are summarized in Table 1. The Spearman's Rank order demonstrated a positive correlation ($p<0.05$) between BMI and cal/day (correlation coefficient rho (r) = 0.21), OSAS incidence (r= 0.12), WHR (r= 0.65) and %CHO (r= 0.15). It also showed a positive correlation between meal number and GERD (r = 0.14) and NED (r = 0.18), and a negative correlation between age and consumption of sugars and carbonated drinks (r = - 0.25). After studying the patient's characteristics, LCD was prescribed to 168, VLCD to 39 and VLCKD to 12 patients. Figure 1 summarizes pre-operative nutritional protocol. A total of 125 patients (57.1%) were scheduled/admitted in the same year to various bariatric operations.

Types of patients and their bariatric operations: 62 (49.6%) patients underwent sleeve gastrectomy, 35 (28%) underwent Roux-n-Y gastric bypass (RYGB), 27 (21.6%) one-anastomosis gastric bypass and 1 (0.8%) single anastomosis duodeno-ileal bypass with sleeve gastrectomy. Out of the remaining 94 patients (43%), 39 (17.8%) patients did not reach the minimal weight loss results and were encouraged for a second course, 4 (1.8%) could not achieve the required scheduled work-up (poor adherence to scheduled protocol) and were treated accordingly, and 51 (19.2%) were put on waiting list.

The remaining 103 patients (evaluated in 2018) were surgically treated, with the total number of surgical procedures performed in 2019 being 215. The operation choice was made after multidisciplinary assessment, according to the eating and psychological characteristics, as shown in Figure 2.

The patient-wise result of the preoperative standard internal

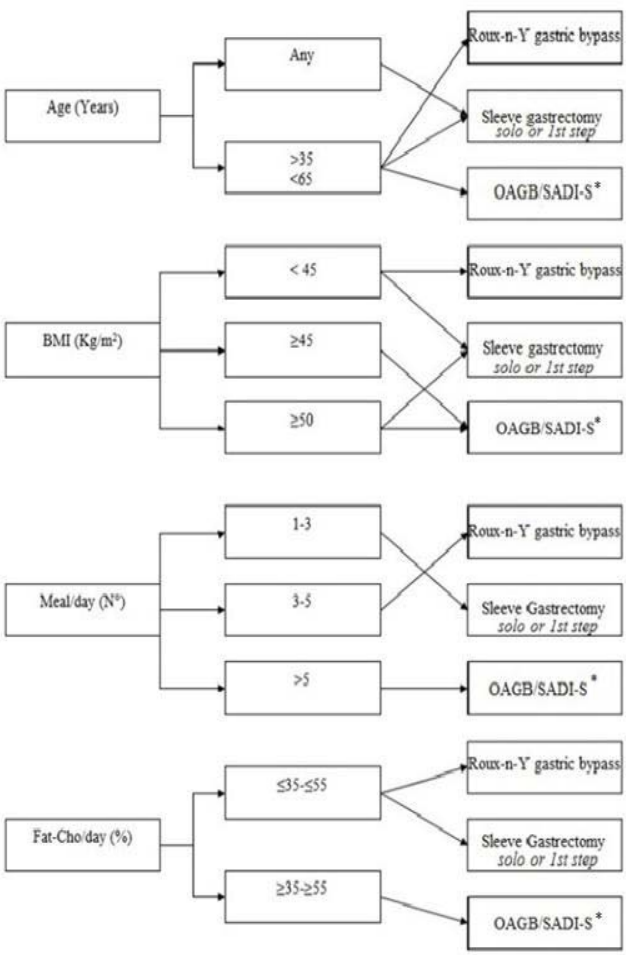

Figure 2: Surgical decision-making process based on diet, age and BMI; *one-anastomosis gastric bypass/Single Anastomosis Duodeno-Ileal Bypass with Sleeve (SADI-S).

protocol revealed that 8.9% of the total patients dropped out, 5.1% had a diagnosis of NED/BED (temporary contraindication), 17.8% could not obtain the requisite scheduled 5% WL (temporary contraindication), 1.8% were non-compliant on time prescribed under the scheduled protocol (temporary contraindication), and 80.3% were compliant.

Discussion

With the worldwide prevalence of bariatric surgery, appropriate strategies should be devised to obtain durable and effective long-term results, which are the main objectives of the surgical treatment. Proper candidate selection, adequate nutritional assessment and behavioral dietary guidance are essential in achieving optimal outcomes [8,9,22]. Establishing a validated and standard surgical decision-making process is almost implausible because the final decision lies with patient's center, taking into consideration comorbidities together with the surgeon's experience and nutritional/psychologic team's background [8,9,22]. Mostly, the pre-operative nutritional intervention is a mix of action valuating several aspects such as eating behaviors, eating patterns, family history of obesity, previous weight-loss regimens, and physical activity habits, together with the

patient's expectations [9]. According to Dagan et al. [22], patients are always encouraged to consider other benefits of the surgery beyond weight loss, including substantial improvement in obesity-related co-morbidities. Conversely, our findings showed a high incidence of obesity-related co-morbidities (e.g., 0.9% OSAS, 12.3% T2DM, and 47.9% HTN). Nutritional history and behavior represent the core of the 1st session schedule, needing time (around 60 minutes consultation) and team expertise, and being able to manage all the complex aspects of obesity. Our evaluation demonstrated several incorrect lifestyle habits with a common large ingestion of calories per day (mean 2629 ± 419 with g of protein and %CHO prevalence; 76 g ± 14 g and 53% ± 3%, respectively) and a trend to sedentary lifestyle (only 5% doing regular physical activities). In addition, all the patients under study consumed a mean of 2.4 sugar beverages/day (range 0 to 10) for mean 5.4 days/week (range 0 to 7), while 113 (51.6%) consumed carbonated drink daily and 80 (36.5%) consumed alcoholic drink routinely (range 1 to 3 times/week). A statistically positive correlation was demonstrated between BMI and Kcal/day (rho = 0.21), OSAS incidence (r = 0.12), WHR (r = 0.65) and %CHO (r = 0.15), confirming the need to raise awareness among patients about their habits and how to correct and re-balance proper dietary intake. As part of the preoperative, psychosocial assessment mood, social and family support, substance use, cognitive function, psychosocial status, motivations and eating disorders should drive surgical option and relative outcomes [14-16]. In this study population, 15 patients (5%) were affected by NED (n=12) and BED (n=3) and were temporarily excluded from the bariatric surgery process. About 80.3% patients could follow the preoperative protocol. Achieving weight loss (at least 5% of excess weight) before bariatric surgery as a reducing-surgical risk and educational intervention represent our hospital/center's central objectives and triggers a warning for performing immediate surgery. A large-scale study based on the data from the SOS Registry showed that weight loss of 9.5% before RYGB was associated with a marked reduction in anastomotic leakage, deep infection or abscess, and minor wound complications [23]. It helps improve the glycemic status, reduce the liver volume and reduce the operative time. In absence of proper guidelines, our choice on LCD, VLCD and VLCKD were based on patient's BMI and metabolic variability (Figure 1); LCD was prescribed to 76.7%, VLCD to 17.8% and VLCKD to 5.5% of bariatric patients. Surgical choice was made at the end of the standard nutritional protocol after a multi-disciplinary discussion. From the nutritional point of view, attention was drawn on observing the patient's age before commencing the actual surgery. In the absence of clear guidelines about "young adults" and the requirement of lifelong post-operative malnutrition and strict vitamin supplementation should be considered before take any decisions regarding the treatment approach. Accordingly, hypo-malabsorptive procedure was allowed only for patients older than 35 years with a BMI ≥ 45 kg/m^2 [8,24] as shown in Figure 2. Despite a planned, routinely-adopted, standard nutritional approach in the study population, 8.9% of patients dropped out and 22.9% had temporary contraindications for surgery (5.1% NED/BED, and 17.8% failed to reach the minimal 5% of WL).

Limitations

This study was conducted in one center only in the vicinity of Rome, Italy. Its utility over large population in various countries with different eating patterns, esp. in the USA, amidst dynamically changing lifestyles and eating patterns is constrained.

Conclusion

The present retrospective study demonstrated that the population seeking bariatric surgery had a compromised nutritional behavior with high calories intake and lack of any regular physical activity. Our preoperative educational and nutritional protocol considered all the population's peculiarities and helped the patients to rightly choose their food before commencing the surgical treatment. This study offered a complete population analysis in terms of eating behaviors and disorders. The reported standard schematic approach could help all the clinicians approaching the obesity cure. From the clinical point of view, the knowledge of obese patient's characteristics and a standard pre-operative program could help multidisciplinary assessment and management focused on patient's outcome. To sum up, our study has successfully documented the association between bariatric surgery patients and their eating patterns, lifestyle changes, etc. However, to better diagnose, prognose, and reduce mortality and morbidity, further multi-center and multi-country studies are warranted to achieve better outcomes in tackling a global disease.

Declarations

Compliance with Ethical Standards

Approval from the Internal Ethic Department- Department of Medico-Surgical Sciences and Biotechnologies- "Sapienza" University of Rome, C.so della Repubblica 90-Latina-Italy (retrospective study without drug administration, not modifying the routine practice) was obtained on October 28, 2019.

References

1. World Health Organization. Obesity and overweight.
2. Epidemiological data. Obesity. 2017.
3. Quick V, Wall M, Larson N, Haines J, Neumark-Sztainer D. Personal, behavioral and socio-environmental predictors of overweight incidence in young adults: 10-yr longitudinal findings. Int J BehavNutr Phys Act. 2013; 10: 37.
4. Franko DL, Striegel-Moore RH, Thompson D, Affenito SG, Schreiber GB, Daniels SR, et al. The relationship between meal frequency and body mass index in black and white adolescent girls: more is less. Int J Obes (Lond). 2008; 32: 23-29.
5. Lachat C, Nago E, Verstraeten R, Roberfroid D, Van Camp J, Kolsteren P. Eating out of home and its association with dietary intake: a systematic review of the evidence. Obes Rev. 2012; 13: 329-346.
6. Roman G, Rusu A, Graur M, Creteanu G, Morosanu M, Radulian G, et al. Dietary patterns and their association with obesity: a cross-sectional study. Acta Endocrinol (Buchar). 2019; 5: 86-95.
7. Sbraccia P, Crialesi R, Nicolucci A. 2nd Italian obesity barometer report. Editor. In obesity monitor: Monitoring, prevention, cure, political social and economics facts on obesity care. 2020:170.
8. Di Lorenzo N, Antoniou SA, Batterham RL, Busetto L, Godoroja D, Iossa A, et al. Clinical practice guidelines of the European Association for Endoscopic Surgery (EAES) on bariatric surgery: update 2020 endorsed by IFSO-EC, EASO and ESPCOP. SurgEndosc. 2020; 34: 2332-2258.
9. Durrer Schutz D, Busetto L, Dicker D, Farpour-Lambert N, Pryke R, Toplak H, et al. European practical and patient-centred guidelines for adult obesity management in primary care. Obes Facts. 2019; 12: 40-66.
10. Kushner RF, Neff LM. Bariatric surgery: a key role for registered dietitians. J Am Diet Assoc. 2010; 110: 524-526.

11. Kulick D, Hark L, Deen D. The bariatric surgery patient: a growing role for registered dietitians. J Am Diet Assoc. 2010; 110: 593-599.

12. Livhits M, Mercado C, Yermilov I, Parikh JA, Dutson E, Mehran A, et al. Preoperative predictors of weight loss following bariatric surgery: systematic review. Obes Surg. 2012; 22: 70-89.

13. Kuruba R, Koche LS, Murr MM. Preoperative assessment and perioperative care of patients undergoing bariatric surgery. Med Clin North Am. 2007; 91: 339-351.

14. Greenberg I, Sogg S, Perna FM. Behavioral and psychological care in weight loss surgery: best practice update. Obesity (Silver Spring). 2009; 17: 880-884.

15. Neff KJ, Olbers T, le Roux CW. Bariatric surgery: the challenges with candidate selection, individualizing treatment and clinical outcomes. BMC Med. 2013; 11: 8.

16. Wadden TA, Sarwer DB: Behavioral assessment of candidates for bariatric surgery: a patient-oriented approach. Surg Obes Relat Dis. 2006; 2: 171-179.

17. Informed consent valid from April 2014.

18. Roust LR, DiBaise JK. Nutrient deficiencies prior to bariatric surgery. Curr Opin Clin Nutr Metab Care. 2017; 20: 138-144.

19. Nolan LJ, Geliebter AJ. Factor structure of the Night Eating Diagnostic Questionnaire (NEDQ) and an evaluation of the diagnostic criteria of the night eating syndrome. Eat Disord. 2019; 7: 39.

20. Gormally J, Black S, Daston S, Rardin D. The assessment of binge eating severity among obese persons. Addict Behav. 1982; 7: 47-55.

21. Sim LA, McAlpine DE, Grothe KB, Himes SM, Cockerill RG, Clark MM. Identification and treatment of eating disorders in the primary care setting. Mayo Clin Proc. 2010; 85: 746-751.

22. Dagan S, Goldenshluger A, Globus I, Schweiger C, Kessler Y, Kowen Sandbank G, et al. Nutritional recommendations for adult bariatric surgery patients: Clinical practice. Adv Nutr. 2017; 8: 382-394.

23. Anderin C, Gustafsson UO, Heijbel N, Thorell A. Weight loss before bariatric surgery and postoperative complications: data from the Scandinavian Obesity Registry (SOReg). Ann Surg. 2015; 261: 909-913.

24. Mahawar K, Himpens J, Shikora SA, Jean-Marc Chevallier, Mufazzal Lakdawala, Maurizio De Luca, et al. The first consensus statement on One Anastomosis/Mini Gastric Bypass (OAGB/MGB) using a modified delphi approach. Obes Surg. 2018; 28: 303-312.