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Original Article

Quality of Life After Sleeve Gastrectomy

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Abstract

Background: Sleeve Gastrectomy (SG) is a popular and effective surgical procedure for Metabolic and Bariatric Surgery (MBS) worldwide. As MBS gains popularity across different social classes, evaluating Quality of Life (QoL) post-surgery in various regions is crucial. Social and economic factors significantly influence QoL and can help surgeons identify the best candidates for MBS.

Methods: This pre-post study was conducted on 57 patients between 18 and 60 years old with a Body Mass Index (BMI) over 40 kg/m^2 or over 35 kg/m^2 with at least one obesity-related comorbidity who were candidates for SG. QOL was measured using the WHOQOL-BREF questionnaire. The questionnaire contains 26 items, grouped into 4 domains: physical health, psychological health, social relationships, and environmental health; it also contains QOL and general health items. Each item of the WHOQOL-BREF is scored from 1 to 5 on a response scale, which is stipulated as a five-point ordinal scale. The scores are then transformed linearly to a 0–100 scale. IBM SPSS version 20 was utilized for the analysis

Results: A total of 57 patients underwent SG, with 40 females and 17 males. The patients had a mean age of 37.6±9.58 years and a mean BMI of 42.8±5.20 kg/m^2. The results showed that the scores of all domains of the WHOQOL-BREF questionnaire before and 6 months after SG have a statistically significant difference ($p<0.05$).

Conclusion: The QoL improves after sleeve gastrectomy.

Keywords: Bariatric surgery, Body mass index, Gastrectomy, Quality of life

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Introduction

Obesity has a significant impact on mental health. It is associated with increased risks of cancer, atherosclerosis, heart failure joint pain, and physical dysfunction, especially in the lumbar spine and knee joints. Several obesity-related comorbidities can be prevented or reversed with early weight loss. In patients with obesity, shedding pounds can reduce metabolic dysfunction (1-3). For patients with obesity, Metabolic and Bariatric Surgery (MBS) is now considered to be the most effective treatment. MBS is typically recommended when other forms of conservative therapy have failed. The age cutoffs for this surgery have been eliminated and some previously considered contraindications disorders have been removed, expanding the range of indications. The indications now include individuals with a Body Mass Index (BMI) over 40 kg/m^2 or over 35 kg/m^2 with comorbidities. MBS improves the consequences of type 2 diabetes and enhances the treatment of obstructive sleep apnea through weight-dependent or weight-independent procedures (4-9).

Sleeve Gastrectomy (SG) is an effective surgical procedure and has become the most widely used MBS worldwide. As the first-stage intervention for high-risk individuals, SG is a safe and successful technique (10-13). Patients report improved Quality of Life (QoL) after MBS due to weight loss affecting psychological, social, physical, and emotional functions (9,14-16).

As MBS become more popular across various social classes, it is essential to evaluate the QoL following MBS in different geographical areas, as well as across diverse cultural and socio-economic backgrounds. Social and economic factors can significantly affect QoL, and reassessing these elements can assist bariatric surgeons in selecting better candidates for MBS.

Materials and Methods

This pre-post study was conducted in 2021 on 57 MBS patients at Aria Hospital in Mashhad, Iran, and was approved by the Research Ethics Committee of Mashhad Medical Science, Islamic Azad University (IR.IAU.MSHD.REC.1400.110). Patients between 18 and 60 with a BMI over 40 kg/m^2 or over 35 kg/m^2 with at least one obesity-related comorbidity who were candidates for SG were included. Patients with a known history of major psychiatric illness or of taking psychiatric drugs were excluded. All the patients underwent standard preoperative diagnostic procedures and consultations. After the patients joined the study, the demographic information, including age, gender, underlying disease history, education, occupation, pre-surgery BMI, and economic status was gathered.

QOL was measured using the WHOQOL-BREF questionnaire. The questionnaire contains 26 items, grouped into 4 domains as follows: physical health (7 items-score range: 7-35), psychological health (6 items- score range: 6-30), social relationships (3 items- score range: 3-15), and environmental health (8 items- score range: 8-40); it also comprises QOL and general health items. Each item of the WHOQOL-BREF is scored from 1 to 5 on a response scale, which is stipulated as a five-point ordinal scale. The scores are then transformed linearly to a 0–100 scale. The physical health domain includes items on mobility, daily activities, functional capacity, energy, pain, and sleep. The psychological domain measures include self-image, negative thoughts, positive attitudes, self-esteem, mentality, learning ability, memory, concentration, religion, and mental status. The social relationships domain contains questions on personal relationships, social support, and sex life. The environmental health domain covers issues related to financial resources, safety, health, and social services, living physical environment, opportunities to acquire new skills and knowledge, recreation, the general environment (noise, air pollution, *etc*.), and transportation (17). The validity and reliability of the Persian version of WHOQOL - BREF was confirmed by Najat *et al* (18). All the patients were followed up for 6 months after surgery, and QoL was recorded. It is worth noting that none of the patients in this study experienced complications from SG within six months after the operation.

The data was first tested for normality using a Lilliefors-corrected Kolmogorov-Smirnov test. The Wilcoxon test was used for non-normally distributed data. IBM SPSS version 20 was utilized for the analysis, and regression was performed to further examine the results. A significance level of less than 5% was employed for all the tests.

Results

A total of 57 patients underwent SG, with 40 females and 17 males. The patients had a mean age of 37.6±9.58 years and a mean BMI of 42.8±5.20 *kg/m²*. Patient baseline characteristics are summarized in table 1. The results showed that the scores of all domains of the WHOQOL-BREF questionnaire before and 6 months after SG have a statistically significant difference, which is presented separately in table 2.

There was a total of 57, 23 patients under 35 years old and 34 patients over 35 years old. Both the age groups indicated statistically significant differences in all the subscale scores before and after surgery ($p<0.05$). In both genders, the scores of all the subscales before and 6 months after surgery exhibited statistically significant differences ($p<0.05$). Furthermore, the patients were divided into groups based on their BMI. Those with a BMI less than or equal to 40 *kg/m²* and those with a BMI more than 40 *kg/m²* showed

Table 1. Frequency distribution of demographic characteristics in the population under study

Qualitative variable		Frequency (n)	Percentage (%)
Gender	Female	40	70.2
	Male	17	29.8
Educational level	High school	24	42.1
	Bachelor and master's degree	28	49.1
	Doctoral degree	5	8.8
Job status	Unemployed	7	12.3
	Housewife	15	26.3
	Employed	19	33.3
	Self-employed	16	28.1
Income level (Million Tomans)	<5	4	7
	5-10	30	52.6
	≥10	23	40.4
Comorbidity	None	27	47.4
	At least One	30	52.6
Quantitative variable		**Mean**	**SD**
BMI (*kg/m²*)		42.8	5.20
Age (years)		37.6	9.58

Body Mass Index: BMI.

Table 2. Quality of life assessed by WHOQOL-BREF

Domain	Baseline median (IQR)	6-Month median (IQR)	Wilcoxon signed ranks test	p-value
General health	37.50(37.50)	75(12.50)	-5.794	<0.001
Physical health	42.85(35.71)	78.57(17.86)	-5.845	**<0.001**
Psychological health	41.66(25)	75(20.83)	-6.013	**<0.001**
Social relationships health	50(45.83)	75(20.83)	-5.552	**<0.001**
Environmental health	59.37(15.63)	68.75(14.06)	-5.143	**<0.001**

statistically significant differences in all the subscale scores before and after surgery ($p<0.05$).

When analyzing based on occupation, the patients were categorized into three groups: associate's degree, bachelor's and master's degree, and above Master's degree. It was found that in individuals with a degree higher than a master's degree, only the subscale of social health demonstrated a statistically significant difference before and after surgery. However, in the other two groups, scores of all the subscales before and 6 months after surgery had statistically significant differences ($p<0.05$). Monthly income was also considered, and it was found that individuals with a monthly household income of less than 5 million Tomans indicated no statistically significant differences in any subscales before and after surgery. However, in the other two income groups, all the subscale scores before and 6 months after surgery had statistically significant differences ($p<0.05$).

Bariatric surgery patients follow a specific diet that emphasizes protein intake, regular exercise, and supplements. These requirements, however, can lead to significant financial costs, making this option less accessible for low-income individuals. Limited access may affect the surgery's effectiveness and lower patients' QoL.

Finally, obesity-related comorbidities were investigated. Individuals with at least one comorbid disease and those without any disease, both showed statistically significant differences in all the subscales before and 6 months after surgery ($p<0.05$).

The independent effect of each variable on the different aspects of QoL measured by the WHOQOL-BREF questionnaire was analyzed. It was found that age and monthly household income were statistically associated with the environmental health attitude subscale, with higher scores associated with increasing age and monthly income. Monthly household income was also found to be linked to the social, mental, and physical health subscales, showing that higher income was associated with better QoL in these areas after surgery. Additionally, the presence of underlying disease and monthly household income were both found to be linked to the overall QoL score after surgery, with those without underlying disease and higher monthly incomes having higher overall QoL post-surgery.

Discussion

The QOL of the patients was assessed before and after a 6-month of SG. Based on the results, patients' QOL increased undergoing SG.

Obesity is linked to different physical, psychological, and social problems. Therefore, focusing on strategies to identify and treat obesity seems important. MBS has positive outcomes, prompting researchers to seek new weight-loss methods with reduced complications and lower risk of recurrence (19,20). Obesity has a significant impact on patients' QoL. obesity and related diseases may cause people to become less physically active. It is also likely that a person's inappropriate appearance creates a variety of mental health issues and has a significant impact on their behavior, emotions, and social interactions in life. As a result, one of the most essential aspects of evaluating obesity treatment strategies is to include their impact on patients' QoL (21,22).

Several studies have indicated an improvement in QoL after MBS, although the type of surgery performed and the questionnaires used in the studies vary. Malekpour *et al* revealed that SG improves the QOL of patients with morbid obesity. They used the WHOQOL-100 questionnaire, which examines six domains: physical, mental, independence level, social communication, environment, and spiritual domain. Patients completed this questionnaire before, 6 months, and 12 months after surgery. Overall QOL increased from 47.11±9.4 before surgery to 68.9±6.2 in 6 months and 82.11±3.3 in 12 months, which is statistically significant. Furthermore, the study results revealed that one year after SG, all QOL parameters and the overall QOL score improved significantly, which is consistent with the most recent assessment results (23). Sarwer *et al* conducted a study involving 200 patients who had undergone *Roux-en-Y Gastric Bypass* (RYGB). The study utilized various questionnaires including the SF-36 (36-item Short Form Health Survey), Effect of Weight IWQOL on QoL, Image QoL Questionnaire, Body Shape BIQOLI, and the BSQ body shape questionnaire. The results showed improvement in QOL, body image, and sexual function (24). The findings from both studies strongly support the current research outcomes.

A study conducted in the Netherlands examined the

QoL of patients undergoing MBS. The study involved 4,864 individuals who completed the RAND-36 questionnaire before and one year after surgery. The results demonstrated improved physical performance, reduced physical role limitations, and overall enhanced health. However, the perception of general health decreased. It was found that the improvement in QoL was similar for both SG and RYGB, except for physical function and general health perception, where RYGB patients showed greater improvement (25). These findings align with our most recent evaluation.

Between December 2021 and February 2022, a cross-sectional study recruited 40 individuals who had undergone MBS in various regions of Saudi Arabia. The study found that the QoL following surgery was rated as average or normal. Additionally, the study revealed that socio-demographic factors such as age, gender, country, education level, marital status, and history of chronic diseases or comorbidities significantly influenced reported QoL (26). The present research supports the mentioned findings.

In an observational study, the Moorehead-Ardelt QoL Questionnaire was applied to 94 patients who were submitted to MBS with more than 5 years of follow-up. Sex, age, type of intervention, failure of MBS, and comorbidities showed no significant impact on QOL. Furthermore, improvement in high blood pressure was linked to improved QOL, whereas improvement in other comorbidities had no significant influence on the patient's long-term QOL (27). In a separate cohort study, patients who underwent MBS were compared to patients who were waiting for surgery. Further analysis was conducted for patients who also underwent Body Contouring Surgery (BCS). Patients filled out the Short Form-36 (SF-36) QoL Survey. The average scores for all SF-36 domains in the postoperative group were significantly higher than in the preoperative group. This notable difference in scores remained even after adjusting for patients' current BMI. Among the patients who underwent BCS, there was a greater overall improvement in health-related QoL in physical function, physical health, pain, energy, and general health perception (28). Additionally, one study collected preoperative and 18-month postoperative data from 56 obese patients who received BST. Four questionnaires were used in this study: the Short Health Questionnaire 36 for HRQoL, a 14-item questionnaire on MedDiet adherence, the Rapid Assessment of Physical Activity (RAPA), and the Beck Depression Inventory-II. The results indicated that patients who had never suffered from depression had a higher psychological QOL, while those who had lost more than 25% of their total body weight had a higher physical and psychological QOL (29).

Since this study was conducted in a single center, one of the main drawbacks of this research is the small sample size.

Conclusion

The study revealed a significant difference in all domains of the WHOQOL-BREF questionnaire after sleeve gastrectomy, indicating an improvement in QoL.

Ethical approval

The present study has a code of ethics with an ID number IR.IAU.MSHD.REC.1400.110. All the procedures performed in the study were in accordance with the ethical standards and the 1964 Helsinki Declaration.

Informed consent statement

Informed consent was obtained from all the individual participants included in the study.

Funding

None.

Conflict of Interest

None.

References

1. Sarma S, Sockalingam S, Dash S. Obesity as a multisystem disease: trends in obesity rates and obesity-related

complications. Diabetes Obes Metab 2021;23(S1):3-16.

2. Wiggins T, Guidozzi N, Welbourn R, Ahmed AR, Markar SR. Association of bariatric surgery with all-cause mortality and incidence of obesity-related disease at a population level: a systematic review and meta-analysis. PLoS Med 2020 Jul 28;17(7):e1003206.

3. Vincent HK, Vincent KR, Seay AN, Hurley RW. Functional impairment in obesity: a focus on knee and back pain. Pain Manag 2011;1(5):427-39.

4. Elder KA, Wolfe BM. Bariatric surgery: a review of procedures and outcomes. Gastroenterology 2007;132(6):2253-71.

5. Runkel N, Colombo-Benkmann M, Hüttl TP, Tigges H, Mann O, Sauerland S. Bariatric surgery. Dtsch Arztebl Int 2011;108(20):341-6.

6. Fritscher LG, Canani S, Mottin CC, Fritscher CC, Berleze D, Chapman K, et al. Bariatric surgery in the treatment of obstructive sleep apnea in morbidly obese patients. Respiration 2007;74(6):647-52.

7. Gelfand BD, Wright CB, Kim Y, Yasuma T, Yasuma R, Li S, et al. Iron toxicity in the retina requires Alu RNA and the NLRP3 inflammasome. Cell Rep 2015 Jun 23;11(11):1686-93.

8. Review C. Benefits and risks of bariatric surgery in adults: a review. JAMA 2020;324(9).

9. Mouawad C, Aoun R, Dahboul H, Feghali E El, Kassar S, Alkassis M. Quality of life after laparoscopic sleeve gastrectomy: pre- operative, 1-year and 5-year results. J Minim Access Surg 2023;459-65.

10. Moy J, Pomp A, Dakin G, Parikh M, Gagner M. Laparoscopic sleeve gastrectomy for morbid obesity. Am J Surg 2008;196(5):56-9.

11. Chung AY, Thompson R, Overby DW, Duke MC, Farrell TM. Sleeve gastrectomy: surgical tips. J Laparoendosc Adv Surg Tech 2018;28(8):930-7.

12. Singh S, de Moura DT, Khan A, Bilal M, Ryan MB, Thompson CC. Safety and efficacy of endoscopic sleeve gastroplasty worldwide for treatment of obesity: a systematic review and meta-analysis. Surgery Obes Relat Dis 2020 Feb 1;16(2):340-51.

13. Gadiot RP, Biter LU, van Mil S, Zengerink HF, Apers J, Mannaerts GH. Long-term results of laparoscopic sleeve gastrectomy for morbid obesity: 5 to 8-year results. Obes Surg 2017 Jan;27:59-63.

14. Vega Albornoz N, Navarro Mora O, López Espinoza MÁ. Effect of bariatric surgery on quality of life in obese patients: a global systematic review. Rev Fac Med Hum 2023;23(4):5-6.

15. Nielsen HJ, Nedrebø BG, Fosså A, Andersen JR, Assmus J, Dagsland VH, et al. Seven-year trajectories of body weight, quality of life and comorbidities following Roux-en-Y gastric bypass and sleeve gastrectomy. Int J Obes 2022;46(4):739-49.

16. Blumenfeld O, Rosenberg A, Friedman Y, Susmallian SG, Keinan-Boker L, Goitein D. Quality of life, depression, and food tolerance, after primary sleeve gastrectomy among israeli patients: a cross-sectional national study. Bariatr Surg Pract Patient Care 2023;18(4):233-40.

17. World Health Organization. WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: field trial version, December 1996. World Health Organization; 1996.

18. Nedjat S, Montazeri A, Holakouie K, Mohammad K, Majdzadeh R. Psychometric properties of the Iranian interview-administered version of the World Health Organization's Quality of Life Questionnaire (WHOQOL-BREF): a population-based study. BMC Health Serv Res 2008 Dec;8:1-7.

19. Figura A, Rose M, Ordemann J, Klapp BF, Ahnis A. Improvement in self-reported eating-related psychopathology and physical health-related quality of life after laparoscopic sleeve gastrectomy: a pre-post analysis and comparison with conservatively treated patients with obesity. Eat Behav 2017 Jan;24:17-25.

20. Charalampakis V, Bertsias G, Lamprou V, de Bree E, Romanos J, Melissas J. Quality of life before and after

laparoscopic sleeve gastrectomy. A prospective cohort study. Surg Surg Obes Relat Dis 2015;11(1):70-6.

21. Payne ME, Porter Starr KN, Orenduff M, Mulder HS, McDonald SR, Spira AP, et al. Quality of life and mental health in older adults with obesity and frailty: associations with a weight loss intervention. J Nutr Health Aging 2018;22(10):1259-65.

22. Avila C, Holloway AC, Hahn MK, Morrison KM, Restivo M, Anglin R, et al. An overview of links between obesity and mental health. Curr Obes Rep 2015 Sep;4(3):303-10.

23. Malekpour N, Khoshnoodi M. [Effect of laparoscopic sleeve gasterectomy on the quality of life in patients with morbid obesity.] Research Med 2019 Jan 1;43(2):51-7. Persian.

24. Sarwer DB, Wadden TA, Moore RH, Eisenberg MH, Raper SE, Williams NN. Changes in quality of life and body image after gastric bypass surgery. Surg Obes Relat Dis 2010;6(6):608-14.

25. Poelemeijer YQM, van der Knaap ETW, Marang-van de Mheen PJ, Demirkiran A, Wiezer MJ, Hazebroek EJ, et al. Measuring quality of life in bariatric surgery: a multicentre study. Surg Endosc 2020 Dec;34(12):5522-32.

26. Alotaibi AA, Almutairy AN, Alsaab AS. Post-bariatric surgery patients: a quality of life assessment in Saudi Arabia. Cureus 2022 Apr;14(4):e24273.

27. Soares C, Pinho AC, Sousa HS, da Costa EL, Preto J. Health-related quality of life 6 years after bariatric surgery: factors influencing outcome. Porto Biomed J 2022;7(3):e163.

28. Barbaro A, Kumar A, Asokan G, Green L, Ibrahim A, Goel R, et al. Quality of life after bariatric and body contouring surgery in the australian public health system. J Surg Res 2023 May;285:76-84.

29. Díaz-González BV, Bautista-Castaño I, Hernández García E, Cornejo Torre J, Hernández Hernández JR, Serra-Majem L. Bariatric surgery: an opportunity to improve quality of life and healthy habits. Nutrients 2024 May;16(10).