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Bariatric Surgery and Quality of Life in Obese Patients with Respiratory Difficulty

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Abstract

BACKGROUND/AIMS: Epidemiology shows that obese patients have high respiratory distress and other comorbid diseases in addition to low health-related quality of life (HRQL). The HRQL results were investigated after weight loss in a group of patients with repiratory distress who had undergone bariatric surgery in this study.

MATERIALS AND METHODS: Patients who presented to our clinic with respiratory distress before bariatric surgery were included in this study. One year after surgery, the patients were evaluated for improvements in comorbid diseases and the 36-Item Short-Form Survey (SF-36) Quality of Life Scale was conducted.

RESULTS: In his study, 120 obese patients with respiratory distress were included. The mean age of the patients was 41.28±1.06 years and the ratio of women to men was 70/30. Concomitant diseases included diabetes (61.6%), hypertension (47.5%), social maladjustment (40%), mental problems related to eating (38.3%), asthma (35%) and sleep apnea (27.8%). Postoperative clinical complaints decreased and the amount of drug use in patients relating to all diseases decreased. The SF-36 Quality of Life Scale mean scores of the patients were as follows: physical function (95±7.10), physical role (100±0.0), pain (92.3±10.1), emotional role (79.27±34.16), general health perception (80.3±16.4), energy-vitality (74±15.76), mental health (74.3±17) and social function (84.37±20.57).

CONCLUSION: There was a significant decrease in the clinical complaints and drug use of the patients after bariatric surgery. It was observed that the perception of HRQL was significantly higher. It has been observed that weight loss was beneficial in disease control and quality of life in the obese population. It can be recommended to those who cannot achieve weight loss via non-invasive approaches.

Keywords: Bariatric surgery, comorbid diseases in the obese population, quality of life in the obese population, respiratory difficulty in the obese population

INTRODUCTION

Obesity is a chronic disease of our era and is a cause for concern as a result of its multiple comorbidities. According to the World Health Organization, it is one of the ten highest risk diseases.[1] Respiratory difficulty is a common complaint in obese patients. In the literature, obesity has been recognized as a significant factor for asthma risk and its prognosis.[2] Obesity in patients may be accompanied by more than one comorbidity. Therefore, its treatment is difficult and complex.[3,4] In obese patients, more frequent doctor visits, increased medication use, longer hospitalization, and lower quality of life are observed.[5] The quality of life concept is increasingly being used in the field of health, as in every field.[6] People with extreme obesity face discrimination in society regarding their weight, which is associated with negative psychological consequences. Therefore, these individuals are more likely to experience depression, anxiety, body image dissatisfaction, and poor quality of life. The incidence of more than one chronic comorbid disease in the obese patient group is also one of the significant factors affecting their quality of life. The literature shows that improving the physical condition of obese patients improves comorbid diseases, psychosocial

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factors, and their health-related quality of life (HRQL).[7-9] Quality of life expresses happiness, satisfaction with life and general well-being; it is an important indicator of the success of health interventions.[8,10,11] The effect of a disease on the quality of life is related to the physical, psychological and social perceptions of the patient. Patient perception is usually measured using internationally accepted scales.

In the treatment of obesity, regular physical activity, healthy diet practices and non-invasive medical treatments are recommended. Morbidly obese patients who cannot lose weight through these methods can be referred for bariatric surgery.[12] Bariatric surgery is an invasive procedure which has the potential for complications.[13,14] Although the clinical benefits of bariatric surgery in comorbid diseases are known, less is known about its impact on psychosocial outcomes such as health-related quality. Clinical trials are still needed before recommending bariatric surgery for obesity treatment. In this study, the outcomes of effective weight loss with surgery on the presence of comorbidities and HRQL results in a group of patients who had undergone bariatric surgery were evaluated.

MATERIALS AND METHODS

A total of 120 obese patients who received consultation in our clinic for bariatric surgery were enrolled in this study. The common feature of the patients, which was important for our clinic, was that the patients had breathing difficulties. The targeted weight loss occurred in the patients 6-10 months after surgery. The necessary permission for this study was obtained from the Near East University Clinical Research Ethics Committee (approval number: YDU/2020/81-1133, date: 30.07.2020). One year after surgery, some of these patients were contacted for follow-up at the outpatient clinic and some by phone. After the patients were informed about this study, verbal consent was obtained from those who volunteered to participate. In addition to the demographic information of the patients, their accompanying comorbid diseases, the number of drugs used after surgery and the change in the frequency of their doses were recorded. Following this, the 36-Item Short-Form Survey (SF-36) Quality of Life Scale was administered to the patients. In this study, the postoperative improvement in diseases and drug use and the relationship between age, gender, education, marital status variables and quality of life were compared.

The SF-36 Quality of Life Scale is one of the scales most frequently used to determine quality of life.[15] The scale has 36 items which enable the measurement of 8 dimensions; physical function (10 items), role limitations due to physical functions (4 items), mental health (5 items), social function (2 items), role limitations due to emotional problems (3 items), pain (2 items), energy/vitality (4 items) and general health perception (5 items). The second question on the scale comprises the perception of health change in the last 12 months. Other questions are evaluated based on information from the previous four weeks. The fourth and fifth questions are evaluated as “yes” or “no”, while other questions are evaluated with Likert-type (3, 5 and 6) grading. The score is calculated by reverse scoring for several items of the scale.[15]

RESULTS

A total of 120 morbidly obese patients with respiratory distress were included in this study. The mean age of the patients was 37.4±9.9 years. The ratio of women to men was 70/30, and 55% of them were university graduates. The demographic information of the patients is presented in Table 1.

Of the patients participating in this study, 62.2% had diabetes, 48.1% had hypertension, 40% had social maladjustment, 38% had mental problems related to eating, 35% had asthma and 27.8% had sleep apnea. The comorbidities of the patients are presented in Table 2. After surgery, the clinical complaints relating to these diseases improved and there was a 57.1% decrease in the total number of drugs used for all diseases ($p<0.05$).

When the mean scores for the patients in the sub-dimensions of the SF-36 Quality of Life Scale were investigated, it was determined that physical function was 95±7.10, physical role was 100±0.0, pain was 92.3±10.1, emotional role was 79.27±34.16, general health perception was 80.3±16.4, energy-vitality was 74±15.76, mental health was 74.3±17.06 and social function was 84.37±20.57 (Table 3).

The mean scores in the sub-dimensions of the SF-36 Quality of Life Scale for some descriptive characteristics of the patients are presented

Table 1. Descriptive characteristics of the patients

Introductory features		
Age	**n**	**%**
18-25	6	5
26-35	34	28.3
36-45	48	40
46-55	14	11.7
56 and over	18	15
Total	120	100
Gender	**n**	**%**
Female	84	70
Male	36	30
Total	120	100
Education	**n**	**%**
Primary education	22	18.3
High school	32	26.7
University	66	55
Total	120	100
Marital status	**n**	**%**
Married	90	75
Single	30	25
Total	120	100

Table 2. Medical characteristics of the patients

Medical properties		
Chronic disease	**n**	**%**
Yes	92	76.7
No	28	23.3
Diabetes	74	61.6
Hypertension	57	47.5
Social maladjustment	48	40
Psychological problem with eating	46	38.3
Asthma	42	35
Sleep apnea	32	26.6
Some patients have more than one chronic disease.		

Table 3. Distribution of patients' scores from the SF-36 Quality of Life Scale sub-dimensions

SF-36 sub-dimensions	Mean ± SD	Lowest score	Highest score
Physical function	95±7.10	75	100
Physical role	100±0.0	100	100
Emotional role	88,95±16	66	100
Energy/vitality	74±15.76	40	100
Mental health	74.3±17.06	40	100
Social function	84.37±20.57	50	100
Pain	92.3±1.07	67.5	100
General perception of health	80.3±16.4	40	100

SF-36: 36-Item Short-Form Survey, SD: standard deviation.

in Table 4. When the mean scores in the SF-36 Quality of Life Scale sub-dimensions were investigated according to several descriptive characteristics of the patients, it was determined that the scores for physical health, general health (p=0.020), vitality (p=0.007) and mental health (p=0.003) of the patients in the 46-55 age group were statistically significantly higher. While physical health was good for patients under the age of 46, the average vitality, mental, social, and emotional health was lower than for those patients over 45 years old, which was statistically significant (p=0.049). There was no statistically significant difference between the mean scores of the SF-36 Quality of Life Scale sub-dimensions according to the education level of the patients (p>0.05). According to the gender of the patients, the average scores for vitality and mental health were lower in females, while they were close to each other in the other parameters (p<0.05). While there were no disparities in physical and general health in the married patient group, vitality, mental, social and emotional health were found to be higher for married patients than for those of single patients (p<0.05) (Table 4). One unexpected result was that the mean scores in the SF-36 Quality of Life Scale sub-dimensions for those with chronic diseases (n=92) and those with no disease (n=28) were close to each other (p<0.05).

DISCUSSION

The relationship between obesity and chronic diseases is complex. In addition to the genetic, hormonal and neurogenic effects of obesity, it is thought that it also causes the release of pro-inflammatory cytokines. Obesity makes controlling symptoms difficult in the presence of chronic diseases, and also results in more frequent hospitalizations and a lower quality of life.[2-5] There is an association between improvements in obesity-related comorbidities and an increase in HRQL.[8] It is also known that patients prefer surgical treatment due to the deterioration of their quality of life caused by obesity.[10,16] Clinical markers cannot always be decisive when evaluating the results of health interventions. Sometimes, results known only by the patient can only be understood through their direct responses. Satisfaction with the intervention and general happiness indicates an improvement in the patient's quality of life and this can be a sufficiently valid reason for this intervention.[17]

In this study, a remarkable finding is that although the patients were relatively young on average, 76.7% of them had at least one health complaint which harmed their quality of life and they used drugs to treat it. Adults with metabolic disease prefer BS because they think they can live longer. Syn et al.[18] found in their study that the survival benefit of BS was more pronounced in those with pre-operative diabetes than in those without. In our study, those individuals with a low mean age

Table 4. Scores of the patients from the SF-36 Quality of Life Scale sub-dimensions according to some descriptive characteristics

Introductory features	Physical function (mean ± SD)	Physical role (mean ± SD)	Emotional role (mean ± SD)	Energy/ vitality (mean ± SD)	Mental health (mean ± SD)	Social function (mean ± SD)	Pain (mean ± SD)	General perception of health (mean ± SD)
Age								
18-25	100	100	66	65	40	50	87.5	40
26-35	94.70	100	82.00	71.47	66.11	80.14	88.08	94.41
36-45	96.25	100	90.79	70.62	77.00	85.93	94.68	88.50
46-55	100	100	100	85.71	90.85	100	100	91.66
56 and over	86.66	100	96.22	81.66	81.33	87.50	89.16	83.57
Gender								
Female	93.21	100	87.85	69.64	69.90	80.35	90.35	86.28
Male	99.16	100	91.50	84.16	84.66	93.75	96.66	90.83
Education								
Primary education	86.36	100	96.90	72.27	76.00	89.77	80.90	95.45
High school	98.12	100	87.25	66.56	78.75	81.25	100	89.62
University	96.36	100	87.12	78.18	71.63	84.09	92.27	84.09
Marital status								
Married	95.66	100	92.06	78.00	75.91	88.33	90.33	87.33
Single	93.00	100	79.60	62.00	69.60	72.50	98.00	88.60
Chronic disease								
Yes	95.76	100	90.02	77.60	76.69	85.59	92.01	85.67
No	92.50	100	85.42	62.14	66.57	80.35	93.03	94.14

SF-36: 36-Item Short-Form Survey, SD: standard deviation.

and high comorbidity had a long-life expectancy and decided to have BS. Statistically significant improvement was noted in their diseases and drug use after surgery and in their weight loss (p=0.011). A high level of quality of life after bariatric surgery is an important indicator of the success of this operation. We consider it a limiting feature of our study that we did not perform a pre-operative quality of life appraisal and a post-operative comparison group.

The results of this study showed that overall HRQL was high one year after bariatric surgery. The mean value of quality of life was found to be high and statistically significant in terms of physical function, perception of pain, physical role, perception of general health, vitality, mental role, social function and mental health (Table 3). The improvement in physical function, physical role and pain perception was found to be significantly higher than the other life perception sub-dimensions. This results appear to be consistent with other research in this area. SF-36 is the most frequently used HRQL measurement in bariatric surgery studies and a 2020 review by Coulman and Blazeby[19] showed that the physical components of HRQL developed more easily than the mental components. The largest improvements in HRQL occurred 1-2 years after surgery. Previously published studies have found that bariatric surgery is effective in improving overall quality of life and is more efficient in restoring physical quality of life than the other specific areas of quality of life measured. In their multicenter studies, Amichaud et al.[20] reported that bariatric surgery offered a significant improvement in the short-term quality of life. Takemoto et al.[21] reported significant progress in both mental and physical features of QoL one year subsequent to bariatric operations and that they remained stable for the next 5 years. Santos et al.[22] obtained health data from 84 people who had had bariatric surgery 5 years previously through questionnaires and telephone interviews. They found that weight loss continued over the first 2 years. Afterwards, they saw that weight increased and quality of life decreased inversely in those with less physical activity.[22] People with BS need to avoid having a sedentary life for permanent weight loss. Pokorski and Głuch[23] observed that mental health and general quality of life improved after laparoscopic sleeve gastrectomy in 52 obese patients and recommended surgery in their study. Poelemeijer et al.[24] reported major improvements 1-year post-bariatric surgery and that there was no difference between the surgical mode except for physical function and general health perception. The aforementioned results were found to be compatible with our study.

An interesting result in the demographic distribution of this study was that bariatric surgery was preferred more on females, married people and university graduates. In terms of age distribution, it was most preferred by individuals between 25 and 46 years old.

In this study, patients with chronic disease were more than those without chronic disease. In cases with comorbidity, this operation is riskier and less improvement in HRQL is expected. However, in the study, it was observed that those patients with chronic diseases had similar quality of life sub-dimension score averages to those without chronic diseases over the short time of 1 year ($p<0.05$).

In this study, the patients' physical quality of life was higher than their mental quality of life. There are some results from other studies which align with our study. Sierżantowicz et al.[25] found that bariatric treatment provided long-term benefits, especially in the physical component score while the psychological response was lower. This was interpreted as indicating that the patients' weight loss and physical recovery had faster clinical repercussions. However, it was thought that mental health and mental quality of life deteriorations were more difficult to recover from and this would take time or clinical support should be sought in this direction.

It is expected that this operation is riskier in cases of comorbidity. It is a striking result that the physical health of these patients with chronic diseases in this study improved after the short period of one year. It was determined that the mean physical role scores of those patients with chronic diseases were not statistically different from those without any chronic disease.

In summary, this results indicate that the mean HRQL score in the early period was high in the group of patients who had undergone bariatric surgery for the treatment of obesity. Obesity-related chronic disease complaints and the number of drugs used for these diseases have also decreased. Therefore, bariatric surgery is a useful intervention especially for obese patients with respiratory distress who cannot lose weight via conservative methods. It should be supported by clinical follow-up in order to maintain these effects in the long term.

CONCLUSION

Available data suggest that obese patients may benefit from bariatric surgery in terms of disease control, medication use and quality of life. These benefits have been gained with weight loss. To recommend bariatric surgery, it is important to determine the reasons for not losing weight via standard methods. Patients should be followed up to avoid any long-term risks of bariatric surgery complications or weight regain.

MAIN POINTS

- Obesity is a different disease with heterogeneous characteristics and its treatment is complex. The treatment of many comorbid diseases is thought to be related to the treatment of obesity.
- An increased tendency for BS has been observed recently in the obese population. The young mean age of the patient population of this study supports this view.
- The patient population of this study appeared to have a young mean age. This may be related to the patients' decision to live a healthy life via surgery. Although the patient population was young, it was observed that most of them had at least one comorbid disease.
- Obese patients could benefit from bariatric surgery in terms of weight-related disease control, medication use and quality of life.
- Patients should be followed up to avoid any long-term risks of bariatric surgery complications or weight regain.

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ETHICS

Ethics Committee Approval: The necessary permission for this study was obtained from the Near East University Clinical Research Ethics Committee (approval number: YDU/2020/81-1133, date: 30.07.2020).

Informed Consent: After the patients were informed about this study, verbal consent was obtained from those who volunteered to participate.

Peer-review: Externally and internally peer-reviewed.

DISCLOSURES

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REFERENCES

1. Waxman A; World Health Assembly. WHO global strategy on diet, physical activity and health. Food Nutr Bull. 2004; 25(3): 292-302.
2. Beuther DA, Sutherland ER. Overweight, obesity, and incident asthma: a meta-analysis of prospective epidemiologic studies. Am J Respir Crit Care Med. 2007; 175(7): 661-6.
3. Kopelman P. Health risks associated with overweight and obesity. Obes Rev. 2007; 8(Suppl 1): 13-7.
4. Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. The disease burden associated with overweight and obesity. JAMA. 1999; 282(16): 1523-9.
5. World Health Organisation. Obesity and overweight. In: WHO. 2020. Date accessed: 6.5.20. Available from: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
6. Fumincelli L, Mazzo A, Martins JCA, Mendes IAC. Quality of life and ethics: a concept analysis. Nurs Ethics. 2019; 26(1): 61-70.
7. Chao HL. Body image change in obese and overweight people enrolled in weight loss intervention programs: a systematic review and meta-analysis. PLoS One. 2015; 10 (5): e0124036.
8. Kolotkin RL, Andersen JR. A systematic review of reviews: exploring the relationship between obesity, weight loss and health-related quality of life. Clin Obes. 2017; 7(5): 273-89.
9. Ogden J, Ratcliffe D, Snowdon-Carr V. British Obesity Metabolic Surgery Society endorsed guidelines for psychological support pre- and post-bariatric surgery. Clin Obes. 2019; 9(6): e12339.
10. Urbach DR. Measuring postoperative quality of life. Surg Innov. 2005; 12(2): 161-5.
11. Onyike CU, Crum RM, Lee HB, Lyketsos CG, Eaton WW. Is obesity associated with major depression? Results from the Third National Health and Nutrition Examination Survey. Am J Epidemiol. 2003; 158 (12): 1139-47.
12. Wolfe BM, Kvach E, Eckel RH. Treatment of obesity: weight loss and bariatric surgery. Circ Res. 2016; 118(11): 1844-55.
13. Benaiges D, Goday A, Pedro-Botet J, Más A, Chillarón JJ, Flores-Le Roux JA. Bariatric surgery: to whom and when? Minerva Endocrinol. 2015; 40(2): 119-28.
14. Upala S, Thavaraputta S, Sanguankeo A. Improvement in pulmonary function in asthmatic patients after bariatric surgery: a systematic review and meta-analysis. Surg Obes Relat Dis. 2019; 15: 794-803.
15. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care. 1992; 30(6): 473-83.
16. Colquitt JL, Pickett K, Loveman E, Frampton GK. Surgery for weight loss in adults. Cochrane Database Syst Rev. 2014; (8): CD003641.
17. Raaijmakers LC, Pouwels S, Thomassen SE, Nienhuijs SW. Quality of life and bariatric surgery: a systematic review of short and long term results and comparison with community norms. Eur J Clin Nutr. 2017; 71 (4): 441-9.
18. Syn NL, Cummings DE, Wang LZ, Lin DJ, Zhao JJ, Loh M, et al. Association of metabolic-bariatric surgery with long-term survival in adults with and without diabetes: a one-stage meta-analysis of matched cohort and prospective controlled studies with 174 772 participants. Lancet. 2021; 15; 397(10287): 1830-41.
19. Coulman KD, Blazeby JM. Health-related quality of life in bariatric and metabolic surgery. Curr Obes Rep. 2020; 9(3): 307-14.
20. Amichaud R, Donatini G, Barussaud ML, Charalambous C, Ingrand I, Faure JP. Health-related quality of life after laparoscopic sleeve gastrectomy. A multi-center experience. Minerva Chir. 2016; 71: 245-51.
21. Takemoto E, Wolfe BM, Nagel CL, Boone-Heinonen J. Physical and mental health-related quality of life changes among insurer subgroups following bariatric surgery. Obesity (Silver Spring). 2020; 28(3): 669-75.
22. Santos C, Carvalho M, Oliveira L, Palmeira A, Rodrigues LM, Gregório J. The long-term association between physical activity and weight regain, metabolic risk factors, quality of life and sleep after bariatric surgery. Int J Environ Res Public Health. 2022; 7; 19(14): 8328.
23. Pokorski M, Głuch A. Perception of well-being and quality of life in obese patients after bariatric surgery. Adv Exp Med Biol. 2022; 1374: 81-90.
24. 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; 34(12): 5522-32.
25. Sierżantowicz R, Ładny JR, Lewko J. Quality of Life after Bariatric Surgery-A Systematic Review. Int J Environ Res Public Health. 2022; 19(15): 9078.