Clinical and Experimental Health Sciences

Determination of Quality of Life of Individuals Before and After Bariatric Surgery: Prospective Study with 1 Year Follow-Up

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ABSTRACT

Objective: This study was conducted to investigate the effect of bariatric surgery on quality of life.

Methods: This study used a quantitative, descriptive, cross-sectional and prospective study design. This study was conducted between 1 January 2016 and 1 June 2017 at an university hospital in Turkey. The questionnaire form that developed by the researchers and the Short Form-36 quality of life scale before bariatric surgery were applied to the individuals. Participants were evaluated with the same scale at 1 month, 3 months and 1 year after bariatric surgery.

Results: The mean age of the individuals was 37.37 ± 9.18.While the mean of body mass index was 48.18±5.8 kg/m2 before bariatric surgery, it decreased to 27.18±3.21 kg/m2 in one year after bariatric surgery. Simple linear regression analysis was given between the subscale of SF-36 and the descriptive characteristics of the participants according to the follow-up times and there was a moderate positive relationship between preoperative physical health and gender (β = 0.450, p <0.05). In the lineer regression analyses, a statistically significant relationship was found between the body mass index in the 3rd month and the quality of life before bariatric surgery (β=1.446, p<0.05), between pre – body mass index and quality of life in post – bariatric surgery in 1st month (β=1,474, p<0.05), between body mass index in post – bariatric surgery in 1st month and quality of life in post – bariatric surgery in 1st month (β =2.173, p<0.05), between body mass index in post – bariatric surgery in 3rd month and quality of life in post – bariatric surgery in 1st year (β =-0.955, p<0.05).

Conclusion: It is obvious that the nurse's counseling role is very important in the long-term follow-up of patients, including improving the quality of life. Within 1 year, bariatric surgery found a positive effect on quality of life as a result of weight loss.

Keywords: Bariatric surgery, quality of life, nursing.

1. INTRODUCTION

Quality of life (QoL) is a subjective concept that does not have a standard indication, reflects a person's ability to perform the activities of daily living on their own, to the point of people's personal and social satisfaction (1). Health-related quality of life (HRQoL) is a complex and multidimensional structure of a person's health and well-being perception, directly or indirectly from a bio-psychosocial perspective (1,2). Today, improving the QoL has become a universal target adopted by societies. Indeed, HRQoL is now considered, worldwide, to be a vital parameter after medical treatment (3). In the literature, there are many factors that affect HRQoL (4). One of them is obesity, and especially morbid obesity (body mass index (BMI)> 40 kg/m^2) which is reported to have a significant negative impact on HRQoL (5,6) because obesity prevents a person from performing his/her daily activities and prepares the basis of obesity-related comorbidity and early mortality (7). As the concept of HRQoL is also associated with survival and accompanying diseases, obesity is seen as a preventable vital problem. In this context, many treatment methods have been developed worldwide to control obesity and to maximize the QoL and physical and mental health (8). It is bariatric surgery (*obesity surgery* –OS) that gives the most positive results among these methods (9). In many different countries across the world, OS has been practised for more than 50 years (10). The first surgical procedure, aimed in particular at weight loss, was end-to-endjejuno-ileostomy by Varco of the University of Minnesota in 1953. Gastric bypass surgery was performed in 1960 for the first time by Mason. In 1976, Scopinaro introduced the first bio-pancreatic diversion and this started to be applied (10). And firstly, the adjustable gastric band was applied by Kuzmak in 1986 and laparoscopic OS has became popular in 1993. The first sleevegastrectomy was described in 1993. Since 1994, it has been successfully applied laparoscopically (10). Today,

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all of these interventions are performed laparoscopically with technological developments (10). Because laparoscopic surgery has less negative impact on QoL than open surgery, OS is preferred by many people as a weight loss method (11). In a study that includes data from Turkey, conducted by Angrisani et al. (12) a total of 468,609 people had OS in 2013; with the highest number being the figures for the US/ Canada (n=154,276). In Turkey, this number of underwent OS was 3,250.

Besides obesity, comorbid diseases also increase. The presence of morbid obesity-related diseases negatively affects the QoL (13). After OS, patients' QoL improves with the reduction of BMI and also diseases caused by obesity as a result of general health development (13,14,15). Although there are evidences that there is a relationship between improved QoL and weight loss (16,17). An improvement in QoL cannot be said to be related to weight loss alone, because psychological factors (for example, hope, happiness, love-respect, improvement of the financial condition) are also reported to contribute to the recovery rate (5). It is reported that the success after OS affects not only the weight loss but also the mental health and psychosocial status and positively affects the QoL (18).

Many studies can be found in the world literature, examining the effect of OS on QoL, (13, 18, 19, 20, 21) but the only one study (22) in Turkey. This study is thought to be important in terms of weight loss after OS and the improvement in the physical and mental functions of individuals and their awareness of QoL. The fact that there is a limited number of studies examining the effect of OS on QoL in Turkey was instrumental in the planning of this work. In addition, as it is known, nurses play an important role in improving the QoL of patients and adapting to life in the postoperative period. Therefore, this study also shows how important the nurses' follow-up is after surgery. The aim of this study was to evaluate, pre-operatively, in the 1st month, 3rd month and 1st year after surgery, the changes in the QoL of individuals who had undergone OS because of obesity.

2. METHODS

2.1.Study Design and Sample

This study used a quantitative, descriptive, cross-sectional and prospective study design. The population of the study consisted of 63 individuals who have had OS in the general surgery outpatient clinic of hospital between 1 January 2016 and 1 January 2017. The sample of the study consisted of 40 individuals who were conscious, with no orientation problems, who could communicate, were 18 years and over and who agreed to participate in the study.

2.2.Procedure

The purpose of the study was explained to the individuals. Informed consent was obtained from all individual participants included in the study. Individuals' phone numbers were recorded when applying preoperative forms to them. In the 1st month, 3rd month and 1st year after the operation, every person was telephoned again and an interview was arranged in the general surgery outpatient clinic of the hospital. In Turkey, patients are invited to the clinic at certain periods. If the patient prefers, comes for control after OS. However, in this study, the situation was evaluated by the first researcher (the nurse academician) after OS, by calling the patients every 10 days or by meeting them face to face. Patients' QoL scores were measured with SF-36 during routine hospital controls. In these periods, the forms were applied to the individuals in the face-to-face interview method in the general surgery clinic pre-OS and it took about 30-35 minutes to complete the forms. Although the sample size was low in our study, the study was completed with 40 people during the long follow-up (1 year) without any loss of participants.

2.3.Measurements

The data were obtained using a questionnaire developed by the researchers and the Short Form-36 Quality of Life Scale (SF-36).

The Questionnaire Form: The questionnaire developed by the researchers in accordance with the literature (20, 21, 22) consists of seven questions on age, gender, marital status, educational status, presence of chronic disease, how many years of obesity and type of surgery.

The Short Form 36: The SF-36 was developed by the Rand Corparation in 1992. The SF-36 includes one multi-item scale measuring each of the eight health concepts: physical health (PH) (10 items); role limitations because of physical health problems (RP) (4 items); bodily pain (BP) (2 items); social functioning (SF) (2 items); general mental health (MH) (5 items); role limitations because of emotional problems (RE) (3 items); vitality (VT) (energy/fatigue) (4 items) and general health perceptions (GH) (5 items) (23). The SF-36 items and scales were constructed for scoring using the Likert method of summated ratings, excluding the fourth and fifth items, which are answered in a yes/no format. For some of the Likert-type questions, inverse scoring was used. Instead of giving a single total score, the scale gives a total score for each subscale. The subscales assess health between 0 and 100 points, 0 indicating poor health status, and 100 indicating good health status. The SF-36 is divided into eight subscales to generate two summary scores. The reliability and validity of the Turkish version of the SF-36 was assessed by Koçyiğit et al. in 1999 (24). Cronbach's-α coefficient was calculated for each subscale and was found between 0.73 – 0.76.

Before the data was collected, the ethical approvals (decision number: 2017-07/15 Date: 26.07.2017) were got permission of the institution where the application was performed and written permission was obtained from the general surgery department institution official. This study was carried out with the 1964 Helsinki declaration and later changes or comparable ethical standards.

2.4.Statistical Analysis

Statistical analyses were performed using IBM Statistical Package for the Social Sciences (SPSS, version 22.0). Descriptive statistics (e.g. mean, standard deviation and frequency distributions) were generated for all variables. With the Kolmogorov-Smirnov (K-S) test, it was determined that the data showed normal distribution and parametric tests were used while making the analyzes. T test and one way ANOVA test were used in the study when comparing whether there was a difference between the averages obtained in terms of a variable obtained by measurement in independent groups (two or more). Durbin–Watson test was used to determine if there was a relationship between dependent variables. The Pearson product–moment correlation were tested to determine whether there was a relationship between follow-up times of individuals and total QoL scores. Simple linear regression analysis was used to determine whether there is a relationship between independent variables and SF-36 subscale according to follow-up times. And we carried out simple linear regression analyzes to discuss the relationship between two outcome variables, total QoL and BMI, according to the time of follow-up. The level of significance for all analyses was set at $p<0.05$.

3. RESULTS

The basic characteristics of the participants and total score of QoL of individuals according to the follow-up times in the study sample are shown in Table 1. A total of 40 participants completed the questionnaire. The average age of participants in the study was 37.37 ±9.18 years old. The majority of the participants in the study were female, married, were high school graduates, had not chronic disease, had been obese for 5–10 years and had undergone a Roux-en-Ygastric bypass. As seen in Table 1, it was found that there was a significant relationship between the participants' total QoL preoperatively ($p = 0.007$) and this difference was in favor of the male gender. Again, a statistical difference was determined between preoperative QoL and how many years participants were obese ($p = 0.042$). This difference was found to be caused by obese people over 10 years. No statistically significant relationship was found between other descriptive features and total QoL at follow-up. ($p>0.05$).

The results showed that, in our sample, the mean preoperative body mass index (BMI) was 48.18 ±5.8 kg / m^2 (min: 37, max: 59), at the postoperative 1st month BMI was 42.92 ±5.31 kg / m^2 (min: 33, max: 52), in the 3rd month BMI was 35.65 ±5.14) kg / m^2 (min: 25, max: 45) and after the 1st year, BMI was 27.18±3.21 kg/ m^2 (min: 22, max: 35). The relationship between BMI and QoL according to the follow-up time of individuals is shown in Graph 1. As seen in the graph, QoL increases as the BMI rate decreases.

Table 2 shows the correlation analysis between the follow-up times of individuals and the total scores of QoL. When the table is examined; the QoL before OS was found to be positively related to the QoL in the 1st month after OS ($r=0.313$, $p=0.025$) and the Qol after OS 1st year was found to be positively related to the QoL in the 3rd month after OS ($r=.427$, $p=0.003$).

Table 3 shows the simple lineer regression analysis between BMI and QoL total score according to follow-up times. As shown in the table, a significant relationship was found between the BMI in the 3rd month and the QoL before OS ($\beta=1.446$, $p<0.05$), and between the preoperative BMI and QoL in the 1st month after OS ($\beta=1.474$, $p<0.05$), and between the BMI in the 1st month and the QoL in the 1st month after OS ($\beta=2.173$, $p<0.05$). In addition, a significant relationship was found between the BMI at the 3rdmonth after OS and the QoL in the 1st year after OS ($\beta = – 0.955$, $p <0.05$).

In Table 4, the average score of subscale of SF-36 according to tho follow-up times was given. When the table is examined, it is seen that there is a statistically significant relationship between each subscale of SF-36 and the follow-up times ($p=.000$). In other words, the follow-up periods have statistical significance in all subclae of SF-36 in the evaluation of QoL.

As shown in Table 5, simple linear regression analysis was given between the subscale of SF-36 and the descriptive characteristics of the participants according to the follow-up times. In the table, according to the results of the analysis, the results with statistically significant relationship between the subscale of SF-36 and the descriptive features according to the follow-up times are given ($p <0.05$). As seen in the table, there was a moderate positive relationship between preoperative PH and gender($\beta = 0.450$, $p <0.05$). A low positive correlation was determined between RP at the 3rd month after surgery and how many years the participants were obese ($\beta = 0.143$, $p <0.05$). A low negative correlation was found between BP in the first year after surgery and how many years the participants were obese ($\beta=-0.325$, $p<0.05$) A moderately negative correlation was determined between the preoperative GH and the type of surgery ($\beta= – 0.434$, $p<0.05$). A low positive correlation was found between SF at first month and those with chronic disease ($\beta=0.382$, $p<0.05$). Finally, in Table 5, a highly negative correlation was determined between the preoperative RE and the presence of chronic disease ($\beta= – 0.978$, $p<0.05$).

4. DISCUSSION

Obesity has become the biggest preventable health problem affecting the QoL in recent years and OS is the most effective treatment method (25). In this study, the changein QoL of the individuals who underwent OS was evaluated preoperatively and in the 1st month, 3rd month and 1st year after OS, and there was an increase in QoL after OS over time. This is in agreement with studies that found OS not only improved some of the disease symptoms but also improved the QoL by prolonging the life of the individuals (26, 27).

In the present study, it was found that there was a statistically significant relationship in favor of male gender before surgery. A study in Sweden found that there is a similarity

between men and women in PH, the subscale of SF-36 (28). Tsai et al. (29) reported that overweight men were less likely than overweight women to have accurate weight perception, weight dissatisfaction, and attempted weight loss. A study (30) reported that men were less likely than women to perceive they were overweight. This can be explained, in part, by gender-based differences in perceptions of body weight and obesity-related QoL, weight-related attitudes, behaviors, and cultural perspectives. However, there was no significant relationship between post-operative sex and the PH subscale of SF-36 and it can be said that the operation may have physically affected both sex groups equally.

In the present study, it was found that QoL increased as a result of BMI reduction with weight loss. In previous studies (25, 31, 32, 33), a positive correlation was found between weight loss after OS and improvement in QoL. As it is known, the association between BMI and QoL is an inverse linear trend (34). It is also likely that pre-existing and/or post-surgical physical, psychological and social factors interact with weight loss to influence the improvement in QoL following OS. Therefore, the results of this study and previous studies on obesity and QoL can be interpreted as individuals' weight loss after OS, increased physical functions as a result of improved general health, and strengthened social relationships make them feel better emotionally.

As is already known, obesity causes comorbidities and reduced QoL (19, 35). The QoL of individuals improves as a result of the decrease in the diseases caused by obesity after OS (13). In the current study, contrary to the literature knowledge, it was found that the presence of chronic disease did not affect the QoL. The reason for this is that the number of samples is limited. However, in this study, a low positive correlation was found between the SF subscale of SF-36 and those with chronic disease at the first postoperative month. This may be due to the fact that those with chronic diseases feel better socially in the early postoperative period compared to the preoperative period.

There are studies in the literature showing that the type of surgery has no effect on QoL (36, 37). In this study, a moderately negative correlation was found between the GH subscale of the preoperative SF-36 and the type of surgery. So, regardless of the type of surgery, the general health of individuals before surgery was already low. This may have been caused by adverse health conditions caused by obesity on the person.

Although there is evidence of a relationship between improvement in QoL and weight loss, (37) it cannot be said that improvement in QoL is related to weight loss only; there are also psychological factors (eg. hope, happiness, love-respect, improvement of financial situation) that contribute to the rate of recovery (5). Some studies suggest that after OS, QoL is improved forup to 1 year (17) and then there is a decrease in QoL. In contrast, some studies suggest that QoL continues to improve for 2–4 years after OS (38). In the present study, the QoL of the individuals was determined to be at its highest in the 1st year after OS. This can be interpreted as being due to the fact that the fastest weight loss happens in the first 1 year. After 1 year, weight loss may stop and subjects may even gainweight again. Therefore, it is important to follow long-term individuals with a multidisciplinary team approach.

5. CONCLUSION

For a long-term and successful outcome of OS, a person needs to make lifelong nutrition and lifestyle changes. In this case, the support of health professionals is important. In our study, when evaluated within the scope of the Short Form-36, the problems of the patients in many sub-dimensions were determined by the nurse. After the surgical procedure, the lifestyle changes that the patients should make at home after discharge should be followed up by the nurse. This follow-up is important both for early detection of problems and early intervention. Today, the concept of tele-nursing has become popular and has taken an important role in patient follow-up. In this study, 1-year patient results were also obtained as a result of nurse follow-up. In line with the results of this study, the importance of nurse follow-up in prospective studies has been revealed. Patients needed help to both improve their quality of life and maintain healthy weight loss. As a result, in one-year follow-up of individuals who had undergone OS, the procedure was found to be associated with weight loss and an increase in QoL. Results of this study may be generalisable to other surgery areas, states and countries.

Limitations of The Study

This study has several limitations. Unfortunately, the small sample size and the loss of half of the total number of patients to follow-up (50.0%), and reflects the results in only one region. Neverthelessthis study data would provide a more comprehensive insight into the long-term outcomes of the evaluated OS.

In fact, this is more important than a few examples to understand the seriousness of significance. If these studies are conducted with the cohort technique and individuals are followed for a long time, they will make significant contributions to both Turkish and world literature. Therefore, it may be suggested to repeat the study with more samples and longer follow-up periods. Also, more research is needed to see if patients are followed by a nurse after OS.

Conflict of Interest

The authors do not have any conflict of interest to disclose.

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