WHAT MOTIVATES PATIENTS TO UNDERGO BARIATRIC SURGERY?

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ABSTRACT Background: Bariatric surgery has become a standard modality for treating obesity and its associated complications. However, few studies have examined the motivations of patients who choose this modality.
Objectives: We aimed to evaluate the reasons for patients deciding to undergo bariatric surgery.
Methods: A total of 114 participants who were planning to have bariatric surgery completed a short questionnaire consisting of seven statements. Patients were asked preoperatively to rank the statements in order from most to least important. Statements described the following motives for seeking bariatric surgery: appearance, medical conditions, physical fitness, health effects, embarrassment, physical limitations, and employment.
Results: Most of the participants were female (67.5%). The median age was 34.5 years, and the median body mass index was 44.5 kg/m². Among the participants, 30.7% rated having existing medical conditions as their first motivator, followed by fearing future health effects (37.7%) and physical fitness (28.9%) as their second and third motivators, respectively. Those who selected medical conditions as their first motivator were more likely to be male (40.5%, $p< 0.05$), to be $\leq$45 years old (55.6%, $p \leq 0.05$), and to have a BMI of 40-50 kg/m² (36.1%, $p \leq 0.05$). The influence of appearance was notable, as it was the second most commonly selected first motivator (25.4%) next to medical conditions. Those participants who chose appearance as their first motive were more likely to be female (31.2%, $p<0.05$) and <30 years old (45.0%, $p \leq 0.05$).
Conclusions: Existing health conditions are the main reasons for patients to seek bariatric surgery, followed by concerns about the potential development of health issues. Gender and age may also contribute to motives for seeking bariatric surgery.

KEYWORDS motivation, bariatric surgery, obesity

Introduction

Obesity affects more than one-third of the world's population in both the developed and the developing world [1]. The World Health Organization (WHO)defines it as an abnormal accumulation of excess fat that may adversely affect health. Its worldwide prevalence doubled between 1980 and 2014[2], with WHO reporting that over 1.9 billion people18 years and older were overweight in 2014,600 million of them obese. Approximately 13% of adults worldwide are obese (men: 11%, women: 15%). Mortality caused by obesity globally is 2.8 million per year [3].

It is estimated that 20% of the world's population will be obese by 2030 [3]and that 85% of Americans will be affected [4]. In the Gulf countries, the prevalence of obesity is 5-14% in adolescent boys and 3-18% in adolescent girls [5]. In Saudi men, the prevalence of obesity was 24.1% in 2013, and in Saudi women, it was 33.5% [6], with more recent 2018 estimates report-

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ing that 28% of Saudi men and 44% of Saudi women are obese [7]. Obesity rates are 14% in the eastern region of Saudi Arabia, 10% in the western region, 12% in Jizan, 22% in Riyadh, and 34% in Hail [8].

Body mass index (BMI) is used to stage obesity. BMI is derived by dividing weight in kilograms by the square of height in meters. A BMI of 18.5 to 24.9 is classified as normal weight, 25 to 29.9 as overweight, 30 to 34.9 as class I obesity, 35 to 39.9 as class II obesity, and above 40 as class III or morbid obesity. Obesity is associated with multiple diseases and medical conditions, including hypertension, diabetes, cardiovascular disease, osteoarthritis, obstructive sleep apnea, polycystic ovarian syndrome, and psychological problems.

Treatment of obesity has been shown to improve associated co-morbidities and to minimize their complications. Medical management with drugs, however, requires long-term treatment and is associated with side effects and reduced patient compliance. Many patients opt out of medical management of obesity. Dieting and exercise also improve obesity, but this requires strong willpower and effort by the patient [9]. As a result, weight-reduction surgeries—indicated in those with a BMI of >40 kg/m2 or >35 kg/m2who have complications such as type 2 diabetes mellitus, hypertension, and obstructive sleep apnea—have increased. The Swedish Obese Subjects study was performed in 1987 to evaluate the effectiveness of such bariatric procedures over nonsurgical weight-reduction treatments. In a total of 2000 matched pairs of patients, in which one of the pair was surgically treated, and the other received conventional treatment and the pairs followed for over 10 years, the investigators found that after 8 years, the surgically treated patients lost28 ± 15 kg, whereas the conventional treatment group lost 0.5±8.9 kg. The results clearly showed the superiority and effectiveness of bariatric procedures [10].

Bariatric surgery works by decreasing the stomach's size (restrictive procedures) or changing the digestive system to decrease absorption (malabsorptive procedures). As in any surgery, bariatric surgery is not 100% safe. Therefore, it is of value to understand the motivation of those who seek surgery. When patients in Saudi Arabia are offered a surgical option for treating their obesity, most of them are reluctant, seemingly because of a lack of awareness about bariatric surgery and misconceptions about its complications.

Most of the Saudi population is young and, with the rapid development and progress in the country, these young people, especially women, are eagerly seeking work. Obesity may be considered an obstacle to being offered a good job, and so the youthful population is anxious to look thin, to be active, and to remain free of medical problems. In this study, we aimed to examine the motivating factors for patients who choose to undergo surgical procedures for obesity. To the best of our knowledge, no such study has previously been done in Saudi Arabia.

Methods

Study Design and Participants

We conducted an observational, descriptive study of 114 patients who were undergoing bariatric surgery from September 2017 to September 2018 at King Abdulaziz University Hospital, Jeddah, Saudi Arabia.

Data Collection Methods

This study used a short validated questionnaire consisting of seven statements. We asked patients preoperatively to rank each statement in order from the one that described the most important reason that they were seeking bariatric surgery (a score of 1) to the one that described the least essential reason (a score of 7). Statements described the following motives for seeking bariatric surgery: appearance, medical conditions, physical fitness, health effects, embarrassment, physical limitations, and employment (Table 1).

We also asked patients for other factors that were important to them, and that had led them to seek surgery but were not mentioned in the list. However, no such factors were reported by any patient. Additional data that they were asked to provide included gender and age. Patients' weights and heights were obtained from their hospital medical record and were used to calculate their BMI. All participants consented to completing the questionnaire, as well as to the inclusion of their responses in this study. The questionnaire was distributed after we obtained ethical approval for the study from the Research Ethics Committee of King Abdulaziz University Hospital; patient participation was entirely voluntary.

Statistical Analysis

Descriptive statistics are used to describe the characteristics of the study participants. Medians and interquartile ranges (IQRs) are reported for continuous variables and frequencies with proportions are reported for categorical variables. Differences between different motivations were assessed using the chi-square test. A p-value of ≤ 0.05 was considered statistically significant.

Results

In this study, we categorized motives into seven main categories and examined the top three motives overall. Of the 114 participants, 77 (67.5%) were women. The median age was 34.5 years (IQR 28-44) and the median BMI was 44.5 kg/m2 (IQR 40-49) (Table 2). Overall, the existing medical conditions motivator was ranked first by the largest percentage of participants (30.7%). Future health effects (37.7%) and physical fitness (28.9%) were most frequently selected as the second and third motivators, respectively (Table 3). Further analysis showed that, after existing medical conditions, the next most frequently selected fithe rst motivator was a tie between appearance and future health effects, each chosen by 25.4% of participants (Table 4).

Discussion

Bariatric surgery has shown excellent results in terms of weight loss and improvement of co-morbid conditions. Gastric bypass successfully treated type 2 diabetes in 82% of cases [11] and improved gastro-oesophagal reflux [12, 13]. It also improved sleep apnea [14-16]. Gastric banding reduced hypertension in two-thirds of patients [17]. Similarly, hyperlipidemia and hypertriglyceridemia improved in all bariatric procedures [14]. Furthermore, sleeve gastrectomy has shown beneficial effects in metabolic syndrome [20]. Nonetheless, bariatric surgery has many complications and requires proper postoperative care, including changing food habits, focusing on nutrition, and participating in ample physical activities. Many patients have unrealistic expectations after surgery; therefore, accurate preoperative knowledge of the risks and benefits of bariatric surgery may play a role in motivating patients to choose surgery. Some patients

Table 1 Patients ranked statements from the one that described the most important reason that they were seeking bariatric surgery, given a score of 1, to the one that described the least important reason, given a score of 7.

No.*	Motivation	Statement
1	Appearance	I am distressed by my physical appearance and need to improve it.
2	Medical conditions	I want to improve medical conditions associated with my obesity.
3	Physical Fitness	I lack physical fitness and want to be more active to enjoy life more.
4	Health effects	I am concerned that my health will deteriorate and my life may be shortened.
5	Embarrassment	I am embarrassed socially about my weight.
6	Physical limitations	I feel that my physical limitation of obesity makes day-to-day living very difficult.
7	Employment	I am seeking promotion or looking forward to being accepted in a new job that requires me to be physically fit.
*Statements 1 to 6 were designed and adopted from Libeton et al., who asked 208 unselected participants who were followed for a minimum of one year after placement of a laparoscopic band to rate the six statements in order [26].		

Table 2 Characteristics of the participants.

Variable	**N (%)**
Gender	
Male	37 (32.5)
Female	77 (67.5)
Age, years	
Median (IQR)	34.5 (28 44)
Age groups, years	
17-29	37 (32.5)
30-44	50 (43.9)
45-64	27 (23.7)
BMI kg/m^2	
Median (IQR)	44.5 (40 49)
BMI groups, kg/m^2	
$<$40	27 (23.7)
40 50	61 (53.5)
$>$50	26 (22.8)
BMI, body mass index; IQR, interquartile range.	

decide on bariatric surgery to improve their physical activity, sexual and romantic life, and relationships [11]. However, other patients are unhappy with their body image [21], have little confidence in their self-appearance [22], or maybe depressed and thus choose to undergo this surgery [23].

Our results showed that participants most frequently cited medical conditions as the motive for seeking surgery, followed by health effects, physical fitness, and physical limitations in second, third, and fourth place, respectively. Embarrassment was in both fifth and sixth places; employment ranked last with only one participant choosing this reason.

Medical conditions were selected as a motive more by men than by women (40.5% vs 26%, respectively, $p < 0.05$) or by those within the highest BMI group (40-50 kg/m2). Moreover, as patients get older, they tend to give their health concerns a higher priority (55.6% for >45 years vs. 26% for 30-45 years vs. 18.9% for <30 years). Our findings that the health issue was the dominant motivation for seeking bariatric surgery and that, compared with women, men were more likely to be motivated by their health problems are consistent with the earlier work of Munoz et al. [24]. Between 1990 and 2002, they surveyed 109 severely obese patients about their reasons for pursuing surgery for weight loss by undergoing either a duodenal switch procedure or gastric bypass surgery. Results were similar to those of our study in that the vast majority of patients (73.4% of respondents) reported that the main reason for wanting weight-loss surgery was consideration of their current health conditions. Brink and Fergusona also reported that potential motivators for this surgery included concerns about health, appearance, age, competition, and fear[25].

Consideration of health effects was the second most common motive reported in our study (37.7%), which is a good indicator of awareness about such effects in society. Similarly, Dixon et al. [21] asked 204 participants who had undergone a laparoscopic adjustable gastric banding procedure to rate their most important to their least important motives. They found that the desire to improve health was the top motive for seeking bariatric surgery (40% of participants). Physical fitness was ranked third (28.9%), indicating that patients wanted to promote their health and improve their body composition and fitness.

Appearance has a big impact on seeking weight-loss surgery, as it was the second most frequently chosen top motive (equal

Table 3 Ranking of the motivations for bariatric surgery.

Motivation	1^{st} motive	2^{nd} motive	3^{rd} motive	4^{th} motive	5^{th} motive	6^{th} motive	7^{th} motive
Existing medical conditions	35 (30.7)	10 (8.8)	10 (8.8)	11 (9.6)	7 (6.1)	16 (14)	25 (21.9)
Future health effects	29 (25.4)	43 (37.7)	18 (15.8)	10 (8.8)	8 (7)	3 (2.6)	3 (2.6)
Physical fitness	10 (8.8)	20 (17.5)	33 (28.9)	23 (20.2)	16 (14)	7 (6.1)	5 (4.4)
Physical limitations	7 (6.1)	9 (7.9)	19 (7.9)	27 (23.7)	23 (20.2)	22 (19.3)	7 (6.1)
Embarrassment	3 (2.6)	9 (7.9)	13 (11.4)	15 (13.2)	24 (21.1)	32 (28.1)	18(15.8)
Employment	1 (0.9)	4 (3.5)	6 (5.3)	7 (6.1)	15 (13.2)	26 (22.8)	55 (48.2)
Appearance	29 (25.4)	19 (16.7)	15 (13.2)	21 (18.4)	21 (18.4)	8 (7)	1 (0.9)
*N (%)							

Table 4 The top three motives associated with the main motivator.

	1^{st} motive	2^{nd} motive	3^{rd} motive
1^{st} motive	Medical conditions 35 (30.7)	Health effects 43 (37.7)	Physical fitness 33 (28.9)
2^{nd} motive	Appearance 29 (25.4)	Physical fitness 20 (17.5)	Physical limitations 19 (7.9)
3^{rd} motive	Health effects 29 (25.4)	Appearance 19 (16.7)	Appearance 15 (13.2)

Table 5 Association between the first motivation and gender, age groups, and BMI groups.

Motivation	Gender		Age, years			BMI, kg/m^2		
	Male	**Female**	**17-29**	**30-44**	**45-64**	**<40**	**40-50**	**> 50**
Physical fitness	5_a	5_a	2_a	5_a	3_a	2_a	3_a	5_a
	13.5%	6.5%	5.4%	10.0%	11.1%	7.4%	4.9%	19.2%
Health effects	9_a	20_a	6_a	19_a	4_a	7_a	14_a	8_a
	24.3%	26.0%	16.2%	38.0%	14.8%	25.9%	23.0%	30.8%
Medical conditions	15(40.5)*	20(26.0)*	7(18.9)*	13(26.0)*	15(55.6)*	7(25.9)	22(36.1)*	6(23.1)*
Employment	0_a	1_a	1_a	0_a	0_a	0_a	0_a	1_a
	0.0%	1.3%	2.7%	0.0%	0.0%	0.0%	0.0%	3.8%
Physical limitations	3_a	4_a	2_a	3_a	2_a	0_a	4_a	3_a
	8.1%	5.2%	5.4%	6.0%	7.4%	0.0%	6.6%	11.5%
Embarrassment	0_a	3_a	2_a	1_a	0_a	1_a	1_a	1_a
	0.0%	3.9%	5.4%	2.0%	0.0%	3.7%	1.6%	3.8%
Appearance	5(13.5)*	24(31.2)*	17(45.9)*	9(18.0)*	3(11.1)*	10(37.0)*	17(27.9)*	2(7.7)*
Values with the same letter across row are not significantly different.*$p \leq 0.05$. BMI, body mass index.								

to the percentage of patients who chose health effects as the first motive, at 25.4%) and the third chosen second motive (chosen by 16.7% of patients). A much greater percentage of women than men chose appearance (31.2% vs. 13.5%, respectively, $p<0.05$) and most who chose appearance were also young <30 years (45.0%). Our finding is consistent with the results reported by Libeton et al. [26], who asked 208 unselected participants who were followed for at least one year after laparoscopic band placement to rank six statements in order. The investigators reported that appearance was the second most common motive, with 32% of patients choosing it after medical conditions (52%); appearance was more likely to be chosen by young women who were <30 years old (37.3%). Knutsen and Foss suggested preoperative mandatory lifestyle courses to improve outcome and expectations after bariatric surgery [27].

Our study helps in understanding which factors positively affect obese patients who are deciding whether to undergo operative treatment. A limitation of this study is that it was carried out in a single tertiary centre. Therefore, these motivations may not reflect the views of patients in other centres. We recommend that the top motives identified in our study be taken into consideration when counselling morbidly obese patients to undergo surgical treatment. Also, it is helpful to stress these factors in social and other media when encouraging hesitant patients who need surgical treatment.

Conclusion

Existing health conditions represent the main motivations for patients who pursue bariatric surgery, followed by concerns about potential future health issues. Gender and age may also contribute to motives for seeking bariatric surgery.

Competing Interests

The authors declare that there is no conflict of interest in this study.

Patient informed consent

Verbal consent was obtained from participants which was approved by Research committee at King Abdulaziz University.

Ethics committee approval

Was obtained from Unit of Biomedical Ethics & Research Committee at King Abdulaziz University (Reference No.327-16).

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