

## Assessing Perceptions Regarding Bariatric Surgery as a Potential Treatment in Jeddah, KSA: A Cross-Sectional Study

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### KEYWORDS

Obesity,  
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### ABSTRACT

**Introduction:** Bariatric surgery has emerged as a crucial intervention for obesity management, yet perceptions about its efficacy, safety, and consequences remain varied. Understanding these perceptions among obese individuals is vital for informed decision-making and effective healthcare delivery.

**Methods:** A cross-sectional study was conducted to assess the perception regarding efficacy, safety, and consequences of bariatric surgery among adults in Jeddah, Saudi Arabia. A structured questionnaire was used to collect data on demographic characteristics, knowledge, beliefs, and available resources of public knowledge regarding bariatric surgery. Convenience sampling was employed, and data was analyzed using appropriate statistical methods.

**Results:** 226 respondents who qualified for our study criteria were surveyed. Of these, 7.52% had undergone bariatric surgery. 56.63% viewed it as a quick solution to obesity. As many as 78.76% had tried other kinds of weight loss alternatives. In the study, the education level of participants, family history of obesity, and marital status proved to be significant predictors of attitude towards bariatric surgery. Family and friends were reported to be the main sources of bariatric surgery-related information.

**Conclusion:** Generally, the study presents some mixed attitudes toward bariatric surgery; it shows that most of the subjects would rather have any other means of weight reduction. The level of education, family history, and BMI were very dynamic in the shaping of the subject's decision for BS as a means of weight reduction, hence the need to tailor educational efforts towards capturing misconceptions and informing the patients.

### INTRODUCTION

Excessive fat deposits are a sign of obesity. When a person weighs more than is appropriate for their height, they are said to be obese. Obesity can impact bone health and reproduction, raise the risk of some malignancies, and increase the risk of type 2 diabetes, non-alcoholic fatty liver disease, hypertension, heart disease, and other conditions. About 70% of Saudi Arabian women and 35% of Saudi men were overweight or obese [1-4].

Obese persons often struggle with their mood, self-esteem, quality of life, and body image. Obese people are more likely to have mood and anxiety problems. Research revealed that individuals who were overweight had a lifetime risk of 55% greater rates of depression. Weight loss is typically associated with increased psychological health and functioning. These favorable effects are frequently most noticeable in persons who have dropped a significant portion of their weight, as is common with bariatric surgery [1-6]. Bariatric surgery is becoming more widespread, and it is known as the most effective and long-term treatment for obesity. Managing obesity most effectively can be achieved through bariatric surgery. Over time, they effectively maintain their weight loss and improve related co-morbidities. A well-known weight loss strategy that enables individuals to sustain their weight loss for more than 5 years is bariatric surgery [9-11]

Assessing people's beliefs, knowledge, and attitudes toward obesity and bariatric surgery as a possible treatment is crucial because bariatric surgery is a life-changing procedure that can improve physical and mental health. Still, the stigma connected with it can deter people from getting treatment and negatively impact their lives. A gradual increase in overall bariatric surgery was observed from 43.5 per 100,000 in 2006 to 70.6 per 100,000 in 2009. This increasing trend plateaued from 2010 to 2015. Among all bariatric surgeries performed, the sleeve gastrectomy showed a significant increase from (n = 596) 11% in 2006 to (n = 15,425) 70% in 2015 ( $P < .001$ ), whereas there was a decrease in Roux-en-Y from (n = 10,129) 45% in 2010 to (n = 5074) 24% in 2015 ( $P < .001$ ) [5]. In a study conducted in Saudi Arabia it was found that of 3052 bariatric surgeries performed, the most common type was sleeve gastrectomy (93.9%), followed by gastric bypass surgery (4.58%) and gastric banding (1.47%). The total frequency of incidentalomas was 1.5%; 10.8% of patients had gastrointestinal stromal tumors (GIST), with the stomach being the commonest site for incidental findings. Eighty percent of the patients with GIST were positive for H pylori ( $P=.01$  vs negative patients) [7,8,10-13].

According to a survey by Imam Muhammad ibn Saud Islamic University and King Khalid University, Saudi Arabia, 73% believe surgery has life-threatening consequences, even though only 16.2% think it is the best option for weight loss. A far higher percentage of overweight/obese individuals believe that bariatric surgery is the most efficient and effective treatment option for obesity [5]. According to a survey by King Abdulaziz University Hospital in Saudi Arabia, 3.2 percent of respondents have a limited understanding of obesity prevention, while 46% do. The respondents' understanding of obesity preventive behavior is average, with 50.8% reporting good knowledge. Of the participants, about 31.7% had no idea what bariatric surgery was, 21.5% knew very little, and 46.7% were well aware [6]. Through this research, we hope to spread awareness about obesity and bariatric surgery as prospective treatment choices.

## **MATERIALS AND METHODS**

### **Study Design and Setting:**

A cross-sectional descriptive study was conducted in Jeddah, Saudi Arabia, from July 2024 to December 2024.

### **Study Population and Sample size:**

**Inclusion Criteria:** This study focused on adults aged 18-60 residing in Jeddah city of Saudi Arabia regardless of their nationality and those who agreed to participate. Both male and female adults were included.

**Exclusion Criteria:** People aged below 18 years and above 60 years were excluded.

**Sample size:** Assuming confidence level (e.g., 90%), a margin of error (e.g., 5%) and adult population of Jeddah to be 3.3 million according to 2024 estimates, using the formula ( $n = \frac{Z^2 \times P \times (1 - P)}{E^2}$ ), where Z is the Z-score (1.96 for 95% confidence), P is the estimated proportion (0.5 for a conservative estimate), and E is the margin of error (0.05),

for a 95% confidence level and a 5% margin of error, this results in approximately 225 participants.

### **Measuring Tool:**

The main aims of the study were to identify the knowledge and perception BS among the target population in Saudi Arabia. This included the level of awareness regarding bariatric procedures, attitude toward bariatric surgery as a treatment for obesity, and misconceptions or barriers for the acceptance of such a procedure. The questionnaire was designed in such a way that it fitted with these objectives, so complete data could be gathered.

Insights from a number of studies were used to inform the design of the questionnaire. These provided the framework for the assessment of public knowledge and attitudes toward medical procedures, highlighted the use of simple culturally appropriate language to ensure clarity and comprehension among respondents, and outlined best practices for demographic data collection and stratification to ensure representative understanding of different population groups [5,7,8]. The questionnaire consisted of four main sections: socio-demographic characteristics, anthropometric characteristics, perception and attitudes towards BS and available resources of public knowledge regarding BS.

### **Validation of Questionnaire items in English and Arabic:**

To ensure the reliability and validity of the questionnaire designed to assess the knowledge, attitudes, and perceptions of bariatric surgery among adult individuals, a rigorous multi-step validation process was undertaken. Initially, an extensive literature review was conducted to identify existing instruments and key themes relevant to the subject matter. This comprehensive review provided a strong theoretical foundation, guiding the development of the questionnaire items to ensure they were both relevant and comprehensive.

Following the initial drafting, pilot testing was conducted with a select group of obese individuals. This phase was conducted to evaluate the clarity, coherence, and comprehensibility of the questionnaire. The pilot testing allowed for the identification of potential areas where the questionnaire could be rephrased for better clarity. The participants from the pilot study were not included in the final analysis.

Subsequent to pilot testing, the questionnaire underwent expert validation. A panel of subject matter experts, including experienced clinicians and academicians with specialized knowledge in bariatric surgery and patient education, critically reviewed the instrument. Their feedback and editing further ensured content validity, precision, and alignment with current clinical guidelines and educational standards.

The questionnaire was translated by a native speaker to ensure it was both accurate and culturally appropriate. It was made sure that each question retained its original meaning and was easily understood. The native speaker, fluent in both languages, carefully translated the content, paying attention to cultural aspects and the way people naturally express themselves in the Arabic language. After this, a second native speaker translated the questionnaire back into the original language, which helped to correct any errors or misconceptions in the translation. Finally, a group of bilingual experts reviewed the translated version to make sure it stayed true to the original meaning while being clear, easy to comprehend and relevant for the intended audience.

### **Sampling Technique and Study tool:**

Data collection was carried out using convenience sampling technique. Participants were interviewed in the language of their choice (Arabic or English) using a standardized questionnaire. The questionnaire has been validated and expert opinion has been taken into consideration. Prior to the interview, the questions were translated from English to Arabic by an authorized translator, to suit the primary language used in the study design area. It was further reviewed by proficient speakers of both languages to facilitate accuracy,

comprehensiveness and clarity of questions to accommodate the study population. The translated Arabic version was found from google scholar and reverse translated into English and it was successful as we got the same meaning for the questions.

### **Ethical Considerations:**

The approval for the study was acquired by institutional review board (IRB) of Batterjee Medical College Jeddah, Saudi Arabia (RES-2024-0046), to make sure that the study is compliant with guidelines relevant to the ethical standards. Access to the collected data was limited to the researchers of the study and kept password-protected on Drive. After collecting the data, each participant was assigned a serial number and no personal identification was mentioned.

### **Data Analysis:**

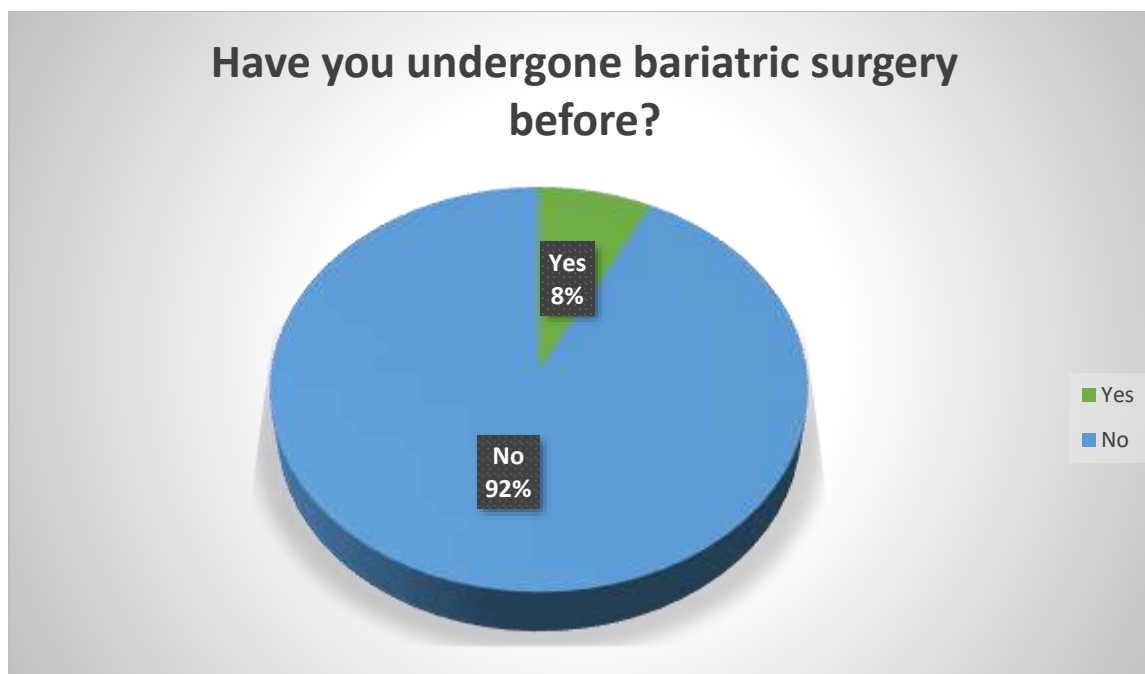
The collected data was statistically analyzed using the statistical package for social studies (SPSS) version 26, created by IBM, Chicago, IL, USA. P-values <0.05 were considered statistically significant.

## **RESULTS**

During the course of this study, 226 participants were surveyed. All of these participants were compliant with our inclusion criteria, so all responses were included. Table 1 presents the demographics of our sample population. Out of 226 participants, only 17 underwent BS, representing 7.52% of the sample population. Fig. 1 below presents this in a pie chart.

**Table 1: Demographic characteristics of the studied subjects (n=226)**

Variables	Frequency (n)	Percentage (%)
<b>Age group</b>		
<20	54	23.89
20-40	164	72.56
40-60	8	3.5
<b>Gender</b>		
Male	67	29.65
Female	159	70.35
<b>Education</b>		
College or above	166	73.45
High School	60	26.55
<b>Marital Status</b>		
Married	43	19.03
Single	180	79.65
Divorced/Widowed	3	1.33
<b>Occupational Status</b>		
Employed	42	18.58
Unemployed	176	77.88
Self Employed	8	3.54
<b>Undergone Bariatric Surgery</b>		
Yes	17	7.52
No	209	92.48
<b>BMI</b>		
<18.5	15	6.63
18.5-24.9	80	35.39
25-29.9	55	24.33
>30	76	33.62



**Fig 1: Pie chart depicting the number of respondents who have undergone bariatric surgery**

Out of the 226 participants that were surveyed, 56.63% believe that weight loss surgery is the fastest and easiest solution to obesity, however, 52.65% of the respondents thought that BS is not the best choice for weight loss. When asked what the participants thought about mortality due to BS, 48% of the participants were unsure of the answer. Interestingly, around 78.76% of the respondents considered alternative weight loss methods before exploring weight loss surgery. It should also be noted that 161 respondents out of 226 haven't attended any informational seminars or sessions related to BS. Table 2 below summarizes all of the responses received on the perception of different aspects of BS.

**Table 2: Perception on different aspects of BS**

Perception	Yes n(%)	No n(%)	I don't know n(%)
Bariatric surgery decreases body weight	186 (82.3%)	25 (11.06%)	15 (6.6%)
Weight loss surgery is the easiest and fastest solution to obesity	128 (56.6%)	83 (36.7%)	15 (6.6%)
Weight loss surgery has no complications	65 (28.7%)	116 (51.3%)	45 (19.9%)
Complications of weight loss surgery can lead to death	111 (49.1%)	21 (9.2%)	94 (41.5%)
Bariatric surgery is the best choice for weight loss	81 (35.8%)	119 (52.6%)	26 (11.5%)
Does bariatric surgery decrease mortality rate?	72 (31.8%)	45 (19.9%)	109 (48.2%)
Have you attended any informational sessions, seminars, or support groups related to bariatric surgery?	65 (28.7%)	161 (71.2%)	0 (0%)
Did you consider alternative weight loss methods before exploring weight loss surgery?	178 (78.7%)	39 (17.2%)	9 (3.9%)

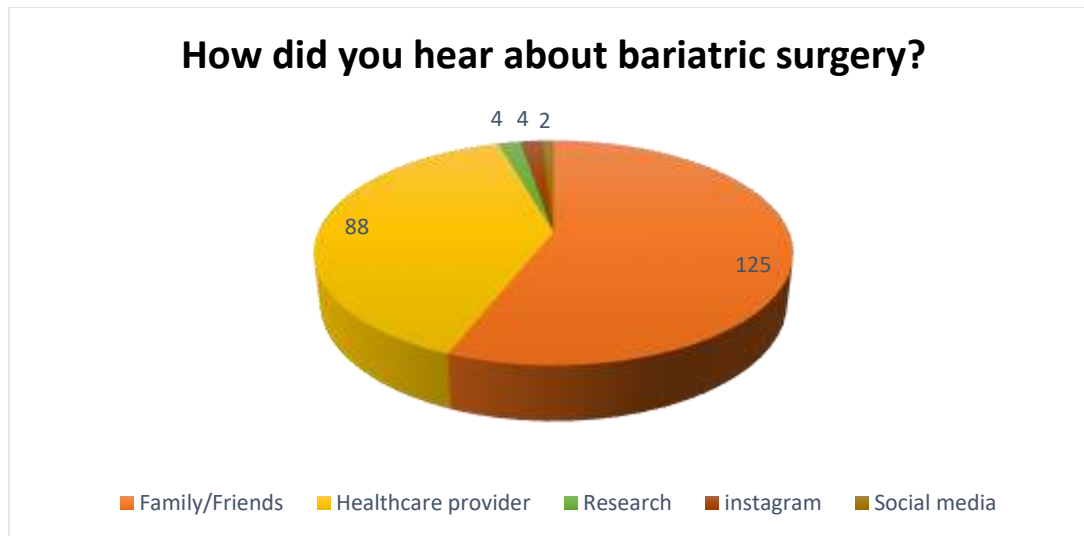
In Table 3 we analyze the different variables and their significance regarding the perception that BS is the best choice for weight loss. Educational level of the respondents, family history of obesity



and BMI were all statistically significant. It was found that 105 (46.46 %) respondents with an education of college or above believed that BS was not the best choice for weight loss. 69 respondents with a family history of obesity also had the same belief. When respondents were asked, where they had first heard about BS, the most common source was found to be family/friends as depicted in Fig. 2.

**Table 3: Variables and their p-values for the statement “Bariatric surgery is the best choice for weight loss”**

<b>Bariatric Surgery is the best choice for weight loss</b>					
<b>Variable</b>		<b>Yes n(%)</b>	<b>No n(%)</b>	<b>I don't know n(%)</b>	<b>p-value</b>
<b>Age</b>	<20	23 (10.1%)	7 (3.09%)	24 (10.6%)	0.873
	20-40	87 (38.4%)	24 (10.6%)	53 (23.4%)	
	40-60	3 (1.3%)	0 (0%)	5 (2.2%)	
<b>Gender</b>	Male	23 (10.1%)	36 (1.5%)	8 (3.5%)	0.952
	Female	58 (25.6%)	83 (36.7%)	18 (7.9%)	
<b>Education</b>	College or above	44 (19.4%)	105 (46.4%)	17 (7.5%)	<0.001
	High School	37 (16.3%)	14 (6.1%)	9 (3.9%)	
<b>Marital Status</b>	Single	62 (27.4%)	92 (40.7%)	26 (11.5%)	0.039
	Married	19 (8.4%)	24 (10.6%)	0 (0%)	
	Divorced/Widowed	0 (0%)	3 (1.3%)	0 (0%)	
<b>Occupation</b>	Employed	15 (6.6%)	25 (11.06%)	2 (0.8%)	0.078
	Unemployed	60 (26.5%)	92 (40.7%)	24 (10.6%)	
	Self Employed	6 (2.6%)	2 (0.8%)	0 (0%)	
<b>Family History of obesity</b>	Yes	49 (21.6%)	69 (30.5%)	6 (2.6%)	<0.001
	No	22 (9.7%)	46 (20.3%)	14 (6.1%)	
	I don't know	10 (4.4%)	4 (1.7%)	6 (2.6%)	
<b>Previous BS</b>	Yes	8 (3.5%)	9 (3.9%)	0 (0%)	0.252
	No	73 (32.3%)	110 (48.6%)	76 (33.6%)	
<b>BMI</b>	<18.5	4 (1.7%)	2 (0.8%)	9 (3.9%)	0.064
	18.5-24.9	65 (28.7%)	2 (0.8%)	13 (5.7%)	
	25-29.9	30 (13.2%)	17 (7.5%)	8 (3.5%)	
	>30	58 (25.6%)	12 (5.3%)	6 (2.6%)	



**Fig 2: Pie chart depicting how participants first got to know about bariatric surgery**

## DISCUSSION

Obesity is a worldwide health and social concern due to its high rates of morbidity and mortality. Although there are many different therapeutic options to address the problem of obesity, bariatric surgery is the only proven treatment for individuals with a BMI of more than 40 kg/m<sup>2</sup>. People's attitudes, knowledge, and views about obesity and bariatric surgery as a possible treatment were assessed in this study. This is significant since bariatric surgery has the power to transform lives and enhance both mental and physical well-being. The majority of study participants also showed a high level of bariatric surgery knowledge. Among the 226 survey respondents (29.65% of men and 70.35 % of women), 82.30 % are aware of bariatric surgery and 7.52% have undergone it. It is the best way to lose weight, according to 35.64% of respondents 49.12% think that complications from weight loss surgery can be lethal. 78.76% of people attempt various weight loss methods before contemplating weight reduction surgery [13]. Our findings are consistent with a study carried out by the general surgery department of King Abdulaziz University Hospital in Saudi Arabia. Even though the majority of respondents (77.4%) think that weight reduction operations aid in weight loss, 63.4% have never undergone surgery, and 69.8% are opposed to adopting weight loss treatments. Health outcomes may be impacted by fear and a reluctance to seek therapy brought on by misconceptions about the surgical process. This confirms previous research demonstrating that ignorance can keep people from undergoing bariatric surgery (Rosen et al., 2019). Furthermore, in keeping with the findings of Puhl & Heuer (2010), the stigma associated with obesity may make patients feel even more guilty for considering surgery [6]. In contrast, a 2019 study conducted by Abdulmalik Altaf and Mohammad M. Abbas from King Abdulaziz University of Medicine's Surgery Department in Jeddah, Saudi Arabia, found that about 22.7% of participants were unfamiliar with the bariatric surgery procedure. Approximately 18.9% of those surveyed believed it to be a cosmetic procedure. About 50% of respondents were unaware of the appropriate indications for bariatric surgery, and 41.2% of respondents stated that they would not seek the help of a bariatric surgeon if they were diagnosed with morbid obesity [14].

Despite providing useful information, this study has several shortcomings. The sample may not be fully representative of the overall population due to its small size. The questionnaire only had ten items, and there might be other subjects that need further research. Furthermore, because people might have underreported negative attitudes or inflated their knowledge, self-reported results may be biased. Future studies should aim for larger and more diverse sample sizes to enhance

generalizability [14]. Surgeons, health educators, and other medical experts need to cooperate across agencies in order to increase public awareness efficiently. Future research should look into targeted educational programs that address specific knowledge and perception gaps around bariatric surgery. Analyzing the role of community outreach programs may also help identify the most effective means of educating underrepresented populations about the risks and benefits of surgery. Examining the long-term effects of improved knowledge on surgical outcomes would also be beneficial [14]. Lastly, Saudi Arabians are generally well-informed about bariatric surgery and obesity. Most Saudis would rather maintain a healthy diet than have surgery. Surgeons and health educators should, among others, take the necessary steps to increase public awareness of this. This study demonstrates that addressing stigma and enhancing information can help people considering surgical intervention make better decisions and receive better support. Further research in this area is necessary to develop effective strategies for increasing knowledge and acceptance of bariatric surgery as a treatment option [14].

## CONCLUSION

This study indicates that although a large proportion of the respondents knew about bariatric surgery for the treatment of their obesity, there were misconceptions and hesitation in pursuing the said treatment, as many consider other options for weight loss prior to the actual surgery. Perhaps one reason for such reluctance is the lack of knowledge regarding what one should expect from this kind of treatment that is, regarding benefits, risks, and indications of bariatric surgery. Targeted educational campaigns that address such misconceptions might help to increase awareness, decrease stigma, and support informed decision-making in individuals with morbid obesity. Future efforts at improving understanding and acceptance should include extensive public health campaigns focusing on the proven efficiency and safety of the surgery. More specifically, further studies could investigate in greater detail the psychological obstacles and stigma-related influences affecting acceptance of surgical options for obesity.

## Abbreviations:

BS: Bariatric Surgery; GIST: Gastrointestinal Stromal Tumors; BMI: Body Mass Index

## Declarations

### Consent:

The study was approved by Batterjee Medical College research and ethical review committee (IRB) (RES-2024-0046).

### Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

### Consent for Publication

All authors approve the publication of the final version of the manuscript.

### Author's Contribution statement

All authors made significant contributions to this research in the form of study design, acquisition of information, drafting, revising and critically reviewing the manuscript.

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

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