

## Assessment of Knowledge and Attitude and Practice of Safety, Effectiveness and Consequences of Bariatric Surgery Among Community In Saudi Arabia

Amani Jamil Alqurashi<sup>1</sup>, Abdullah Saleh Alshafi<sup>2</sup>, Saud Mohammed Saud Aleisa<sup>1</sup>,  
Zainab Yaseen Albahrani<sup>3</sup>, Abdullah Saad Alalyani<sup>1</sup>, Abdulrahman Mubarak M Almutairi<sup>4</sup>,  
Alzaidi Ahmed Abdulghani<sup>1</sup>, Faisal Abdullah Almoumen<sup>5</sup>, Osama Sulaiman Alkhudhairi<sup>6</sup>  
<sup>1</sup>Taif University, <sup>2</sup>King Khalid University, <sup>3</sup>King Faisal University, <sup>4</sup>Majmaah University, <sup>5</sup>Imam Abdulrahman Bin Faisal University, <sup>6</sup>Imam Muhammad Ibn Saud Islamic University, Saudi Arabia

### ABSTRACT

**Background:** Obesity was reported to be highly prevalent in KSA. Bariatric surgery is considered as the most effective, beneficial, and permanent method for treatment of obesity and decreasing the long-term mortality

**Objectives:** Evaluating the knowledge and beliefs about the safety and effectiveness of bariatric surgery among adult Saudi population.

**Methods:** A questionnaire based on cross-sectional study was distributed among 790 adult Saudi population from January 2017- June 2017. The questionnaire was based on 4 aspects including subject's demographics, anthropometric measures, knowledge about obesity and its causes and beliefs about Bariatric surgery.

**Results:** Overweight and obesity were found to be high among the studied population. The most common causes for obesity were bad life style habits and genetic factors. There was a good knowledge about obesity but low favorable beliefs about bariatric surgery as 55.7% of subjects have non-favorable beliefs about the Bariatric surgery and 44.3% have favorable beliefs about the surgery. The favorable beliefs about bariatric surgery were significantly associated with female gender and subjects having high BMI scores.

**Conclusion:** The knowledge of subjects about obesity and its preventive measures were high but the favorable perceptions about Bariatric surgeries were low. These results indicated that efficient educational programs about obesity and Bariatric surgeries are needed for control of obesity and its complications as well as increasing the availability of weight loss surgeries.

**Keywords:** KAP, Safety, Effectiveness, Consequences, Bariatric Surgery, KSA

### INTRODUCTION

KSA was reported to have a rapid increase in the prevalence of obesity as about 33% of Saudi adults are obese and 70% are overweight<sup>(1)</sup>. Many factors contribute to high incidence of obesity including T2DM, metabolic syndrome, dyslipidemia, hypertension, sleep apnea as well as osteoarthritis. Also, life style as diet, exercise and demographics play a significant role in obesity<sup>(2-4)</sup>.

Obesity has many comorbid pathogenic role in many metabolic and cardiovascular diseases as well as poses a risk factor for ovarian, uterine, breast, prostate and colon cancer<sup>(5-7)</sup>. Obesity is a preventable disease that could be managed by modifying life style, exercise, eating habit and using pharmacological therapy<sup>(8, 9)</sup>. During the past two decades, surgical treatment of obesity has shown a growing importance for reduction of weight and decreasing the rates of disease morbidity and mortality<sup>(10, 11)</sup>.

Bariatric surgery is considered as the most effective, beneficial and permanent method for treatment of obesity and decreasing the long-term

mortality<sup>(12, 13)</sup>. The aim of this study was to assess the knowledge and beliefs about the safety and effectiveness of bariatric surgeries among adult Saudi population.

### METHODS

After approval of the ethical committee of faculty of medicine, this cross-sectional study was conducted among adult Saudi population from January 2017- June 2017 in thirteen governorates all over KSA with a population size of 31,742,308 people as reviewed by the General Authority for Statistics (GAS), KSA in 2016<sup>(14)</sup>. The sample size was taken to be 790 Saudi adult participants assuming the response rate of 50% and 95% confidence interval<sup>(15)</sup>. Non-Saudi population, age less than 18 years old and incomplete data were excluded. An informed consent was obtained from all participants included in the study and they were informed that the study has no expenses on their health.

A questionnaire was designed according to the previous study of Ayman Abouhamda *et al.* (2016) with some modifications<sup>(16)</sup> and investigated by 3 experts, approved by the ethical committee of Faculty of Medicine and translated into Arabic then published online. The questionnaire included 4 items:

- 1- Demographics including age, gender, education, employment status and income.
- 2- Anthropometric measurement using the weight and height equation ( $\text{Kg}/\text{m}^2$ ).
- 3- Five questions about the beliefs about the importance, efficiency, and b bariatric surgery.
- 4- Knowledge and causes related to obesity.

**Statistical analysis**

Data were entered into the Statistical Package for Social Sciences (SPSS, version 24, SPSS, Chicago, IL, U.S.A.) and descriptive analysis conducted. Chi square, Fisher exact and ANOVA were used. Statistical significance was accepted at  $p < 0.05$ .

**RESULTS**

**Socio-Demographic Characteristics**

The demographics of included subjects were distributed in table 1. The mean age of the participants was 42.3 years old with 52.8% of subjects were females and 47.2 were males. About 59.5% of subjects were jobless and 40.5 were employed. Most of participants have college degree (71%), 20.5% have primary and secondary degree and 8.5% were illiterate. The majority of subjects

(61.6%) had medium income, 25% had high income and 13.4% had low income.

**Table (1): Socio-Demographic Characteristics (n=790)**

<b>Age (Year)</b>	42.3	±9.7
<b>Female</b>	417	52.8
<b>Male</b>	373	47.2
<b>Employed</b>	320	40.5
<b>Jobless</b>	470	59.5
<b>College</b>	561	71
<b>Primary-Secondary</b>	162	20.5
<b>Illiterate</b>	67	8.5
<b>High</b>	198	25
<b>Medium</b>	486	61.6
<b>Low</b>	106	13.4

**Anthropometric measures**

Table. 2 showed the mean weight of participants was 85 Kg, the mean height 165 cm and the mean BMI was 31.9. The majority of subjects were overweight (25.4%), obese (26.6%), severely obese (13%) and 8.7% were morbid obese.

**Table (2): Anthropometric measures of the study population**

Studied variables	Mean ± SD	Range
Weight(Kg)	85 ± 10.3	61-141
Height(cm)	165.0 ± 11.4	154-189
BMI	31.9 ± 3.16	27-45
BMI classification	Frequency	(%)
Underweight (< 18.50)	21	2.7
Normal (18.50–24.99)	187	23.6
Overweight (25-29.99)	201	25.4
Obese (30.00–34.99)	210	26.6
Severely obese (35.00–39.99)	102	13
Morbid obese (≥ 40.00)	69	8.7

**- Causes of obesity**

The causes of obesity were shown in table. 3. The most common risk for obesity were lack of physical activities (48.1%), bad eating habits (39.7%) and genetic factors (22.4%). The least common causes were pregnancy (19.2%) and diseases or medications (11%).

**Table (3): Causes of obesity (N= 582):**

Causes of obesity	Frequency	Percentage (%)
Hereditary	177	22.4
Disease and medications	87	11
Eating habit	314	39.7
Lack of physical activities	380	48.1
Pregnancy	152	19.2

**- Perception about obesity:**

The awareness of subjects toward obesity showed that most of participants (68.4%) don't consider obesity as a disease. Most of subjects showed poor knowledge regarding the risk of sleeping and practicing disorders (62%) as well as the risk of hereditary factors for induction of obesity (87.5%). The majority of subjects have good knowledge about the effect of bad life-style practices (76%), exercise (83.2%) and drinking water (87%) on obesity. Also, 77.1% of subjects know that obese subjects are at high risk of having diabetes and hypertension.

**Table (4): perception about obesity**

	No	Yes	Don't Know
<b>Q1: Obesity is a disease?</b>	540(68.4%)	180 (22.8%)	70(8.8%)
<b>Q2: Obesity is an increase in body fat?</b>	129(16.3%)	584 (74%)	77 (9.7%)
<b>Q3: Lack of physical activity and too much sleep are risk factors for obesity?</b>	490(62%)	130(16.5%)	170(21.5%)
<b>Q4: Hereditary factors contribute to obesity?</b>	691(87.5%)	99 (12.5%)	----
<b>Q5: Having family members suffering from obesity?</b>	400(50.6%)	390(49.4%)	--
<b>Q6: Bad life style habits could result in obesity?</b>	59(7.4%)	600(76%)	131(16.6%)
<b>Q7: Physical activities decrease the risk of obesity?</b>	83(10.5%)	657(83.2%)	50(6.3%)
<b>Q8: Drinking water could decrease body weight?</b>	55(7%)	688(87%)	47(6%)
<b>Q9: Obese subjects are vulnerable to diabetes and hypertension?</b>	61(7.7%)	609(77.1%)	120(15.2%)

**- Knowledge about Bariatric surgery:**

The perception of included subjects regarding Bariatric surgery showed that most of subjects (68.4%) have bad knowledge about the importance of surgery for getting rid of obesity. Most of subjects (74%) know that surgery decreases the body weight. Also, most of them (62%) know that weight loss surgeries could result in complications. However, 87.5% of them don't consider surgery as the first choice for reduction of body weight without diet or exercise. 49.4% of subjects thought that weight loss surgery decreases the mortality rates but 76% of subjects thought that surgery could result in death.

**Table (4): Knowledge about Bariatric surgery**

	No	Yes	Don't Know
<b>Q1: Is surgery the only way for getting rid of Obesity?</b>	540(68.4%)	180 (22.8%)	70(8.8%)
<b>Q2: Does surgery contribute to reduction of body weight?</b>	129(16.3%)	584 (74%)	77 (9.7%)
<b>Q3: No complications could result from weight loss surgeries?</b>	490(62%)	130(16.5%)	170(21.5%)
<b>Q4: Do you consider surgery is the first choice for reduction of body weight without diet or exercise?</b>	691(87.5%)	99 (12.5%)	----
<b>Q5: Does weight loss surgery decrease the mortality rates?</b>	400(50.6%)	390(49.4%)	--
<b>Q6: Could weight loss surgery result in death?</b>	59(7.4%)	600(76%)	131(16.6%)

- **Beliefs about Bariatric surgeries:**  
About 55.7% of subjects have non favorable beliefs about the Bariatric surgery and 44.3% have favorable beliefs about the surgery.

**Table (5): Beliefs about Bariatric surgeries**

Beliefs about Bariatric surgeries	Frequency	Percentage (%)
Favorable beliefs	350	44.3
Non-favorable beliefs	440	55.7

- **Association between Bariatric surgery beliefs and socio-demographics:**  
The favorable beliefs about bariatric surgery were significantly associated with female gender and subjects having high BMI scores (Table 6).

**Table (6): Logic regression model of favorable beliefs:**

Age	0.781
Female	0.001
Male	
Primary education	0.537
High School	
Collage degree	
Post-graduate	
	0.923
	0.856
	0.02

**DISCUSSION AND CONCLUSION**

The present study has some limitations including the weight and height of subjects were self-reported. The expected mortality rates after surgery were not assessed. Results couldn't be generalized all over KSA as adult subjects only were included.

Overweight and obesity were found to be high among the studied population and this could be attributed to that the majority of respondents were females and obesity is more prevalent in women than men<sup>(17, 18)</sup>. Also, many studies have shown a high prevalence of overweight and obesity among Saudi population<sup>(17, 19, 20)</sup>.

The most common causes for obesity were bad life style habits and genetic factors which was consistent with other studies showing that lack of

exercise and adoption to fast foods were a major factors contributing to obesity<sup>(21-23)</sup>.

The results showed that there was a good knowledge about obesity but low favorable beliefs about bariatric surgery and this could be attributed to that the majority of participants were overweight or obese, the majority of them know about surgery risks as the majority of subjects had college degree.

In conclusion, the knowledge of subjects about obesity and its preventive measures were high but the favorable perceptions about Bariatric surgeries were low. These results indicated that efficient educational programs about obesity and Bariatric surgeries are needed for control of obesity and its complications as well as increasing the availability of weight loss surgeries.

**REFERENCES**

1. **Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C et al. (2014):** Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* (London, England), 384: 766-781.
2. **GBD (2015):** Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* (London, England), 385: 117-171.
3. **Simon TG, Corey KE, Chung RT, Giugliano R (2016):** Cardiovascular Risk Reduction in Patients with Nonalcoholic Fatty Liver Disease: The Potential Role of Ezetimibe. *Digestive diseases and sciences*, 61: 3425-3435.
4. **Bergman RN, Kim SP, Hsu IR, Catalano KJ, Chiu JD, Kabir M et al. (2007):** Abdominal obesity: role in the pathophysiology of metabolic disease and cardiovascular risk. *The American journal of medicine*, 120: S3-8.
5. **Segula D (2014):** Complications of obesity in adults: A short review of the literature. *Malawi Medical Journal*, 26: 20-24.
6. **Daniel S, Soleymani T, Garvey WT (2013):** A complications-based clinical staging of obesity to guide treatment modality and intensity. *Current opinion in endocrinology, diabetes, and obesity*, 20: 377-388.
7. **Pedersen SD (2013):** Metabolic complications of obesity. *Best practice & research Clinical endocrinology & metabolism*, 27: 179-193.

8. **Ryan DHBray GA (2013):** Pharmacologic treatment options for obesity: what is old is new again. *Curr Hypertens Rep.*, 15: 182-189.
9. **Motycka CA, St. Onge EMiller SA (2011):** Treatment Options for Obesity And Potential Therapies on the Horizon. *Pharmacy and Therapeutics*, 36: 282-301.
10. **Adams TD, Pendleton RC, Strong MB, Kolotkin RL, Walker JM, Litwin SE et al. (2010):** Health outcomes of gastric bypass patients compared to nonsurgical, nonintervened severely obese. *Obesity (Silver Spring, Md)*, 18: 121-130.
11. **Colquitt JL, Pickett K, Loveman EFrampton GK (2014):** Surgery for weight loss in adults. *The Cochrane database of systematic reviews*, 8: Cd003641. Available at: <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD003641.pub4/abstract>.
12. **Paluszkiewicz R, Kalinowski P, Wroblewski T, Bartoszewicz Z, Bialobrzaska-Paluszkiewicz J, Ziarkiewicz-Wroblewska B et al. (2012):** Prospective randomized clinical trial of laparoscopic sleeve gastrectomy versus open Roux-en-Y gastric bypass for the management of patients with morbid obesity. *Wideochirurgia i inne techniki maloinwazyjne = Videosurgery and other miniinvasive techniques*, 7: 225-232.
13. **Dixon JB, Zimmet P, Alberti KGRubino F (2011):** Bariatric surgery: an IDF statement for obese Type 2 diabetes. *Arquivos brasileiros de endocrinologia e metabologia*, 55: 367-382.
14. (<https://www.stats.gov.sa/en/4522>).
15. **Raosoft-Inc (2004):** Raosoft Sample Size Calculator. Available: <http://www.raosoft.com/samplesize.html>.
16. **Abouhamda AS, Gan YE, Altowairqi FM, Badr RY, Alzamzami AA, Sherian KA et al. (2016):** Perception of knowledge, attitude, practice of safety, effectiveness, consequences and management of bariatric surgery among community in Jeddah city. *The Egyptian Journal of Hospital Medicine*, 65: 674-682.
17. **Alqarni SSM (2016):** A Review of Prevalence of Obesity in Saudi Arabia. *Journal of Obesity & Eating Disorders*, 2: 2.
18. **Fetuga M, Ogunlesi T, Adekanmbi AAlabi A (2011):** Growth pattern of schoolchildren in Sagamu, Nigeria using the CDC standards and 2007 WHO standards. *Indian pediatrics*, 48: 523-528.
19. **DeNicola E, Aburizaiza OS, Siddique A, Khwaja HCarpenter DO (2015):** Obesity and public health in the Kingdom of Saudi Arabia. *Reviews on environmental health*, 30: 191-205.
20. **Sikorski C, Lupp M, Dame K, Brahler E, Schutz T, Shang E et al. (2013):** Attitudes towards bariatric surgery in the general public. *Obesity surgery*, 23: 338-345.
21. **Tang KH, Nguyen HH, Dibley MJ, Sibbritt DW, Phan NTTran TM (2010):** Factors associated with adolescent overweight/obesity in Ho Chi Minh city. *Int J Pediatr Obes*, 5: 396-403.
22. **Yngve A, De Bourdeaudhuij I, Wolf A, Grjibovski A, Brug J, Due P et al. (2008):** Differences in prevalence of overweight and stunting in 11-year olds across Europe: The Pro Children Study. *European journal of public health*, 18: 126-130.
23. **Abdel-Hady D, El-Gilany ASarraf B (2014):** Dietary habits of adolescent students in Mansoura, Egypt. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 6: 132-144.