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AWARENESS ABOUT THE OBSTETRIC AND GYNECOLOGICAL IMPACT OF BARIATRIC SURGERY AMONG WOMEN FROM AL-JOUF, SAUDI ARABIA

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Abstract:

Background*: Females who suffer from obesity in their reproductive age appeared to be representing most of the patients seeking bariatric surgeries, recording about 80%. Therefore, their knowledge and awareness about these surgeries, and the benefits and complications of the surgery are crucial.*

Aim: *This cross-sectional survey aimed to explore the level of awareness among females in Saudi Arabia towards the obstetric and gynecological outcomes of bariatric surgeries.*

Method: *A self-administered structured questionnaire was distributed among consented females from Al-Jouf region, Saudi Arabia, including questions on bariatric surgeries and their obstetric and gynecological consequences. The items included questions on type of operation, gynecological and obstetric impact, and socio-demographic variables. Awareness scores have a minimum score of zero and a maximum score of six.*

Results: *334 females responded to this survey. The total awareness score for the whole cohort was 2.18 ± 1.23. There was a significant difference among different age groups, where females ageing between 45 and 54 years old had the highest score (3 ± 0.025; P <0.001). Females with a secondary school certification had a significantly higher score (3.28 ± 1.621; P <0.001). Females who had a previous operation showed a significantly higher score (P = 0.001). Females who got their information from physicians had the highest levels of knowledge compared to other females (3.08 ± 1.133; P <0.001).*

Conclusion: *Level of knowledge and awareness of the investigated Saudi population about bariatric surgeries and their gynecological and obstetric impact is considered unsatisfactory. Further studies are needed in other areas in Saudi Arabia.*

Keywords: *Awareness, Obstetric, Gynecological, Impact, Bariatric surgery, Women, Al-Jouf, Saudi Arabia.*

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INTRODUCTION:

Obesity, as a higher than normal body mass index due to excessive amount of fat , is the most common nutritional disorder in the developed nations and is assuming a significant proportion in the developing countries. It associated with an increased prevalence of morbidity and reduced life expectancy. Causes of obesity are complicated and multifactorial, where both genetic and environmental factors play a significant role in its development. It tends to occur in families, though no specific pattern of inheritance has been observed. The prevalence of obesity varies in different populations, and further variations depend on age and sex[(1)]. The prevalence of obesity is a public health concern all over the world[(2)]. Obesity increases risk of obstetric and gynecological problems, such as infertility, polycystic ovary syndrome (PCOS), gestational diabetes, pre-eclampsia, eclampsia, macrosomia, and fetal growth restriction[(3)]. Therefore, because of the substantial increase in the incidence of obesity among women of reproductive age, a rise in the risk of adverse maternal and fetal outcomes should be expected[(4)]. Weight loss can decrease the risk of these adverse outcomes[(5)]. However, dietary changes, exercise, and medical management result in only short-term benefits, which are not maintained in the long-term[(6)].

Bariatric surgery (BS) is believed to be a useful method to maintain weight loss[(7)]. BS procedures are classified into three groups. Restrictive procedures, e.g., laparoscopic adjustable gastric banding (LAGB) and sleeve gastrostomy (SG), cause weight loss by reducing gastric capacity, which in turn restricts energy intake[(8)]. Mal-absorptive operations, e.g., the bilio-pancreatic diversion (BPD), result in weight loss by limiting the absorption of nutrients[(9)]. Finally, mal-absorptive and restrictive procedures, e.g., Roux-en-Y gastric bypass (RYGB), decrease stomach capacity, thereby resulting in malabsorption and a certain degree of limitation of food intake[(10)]. BPD is not common because it is related to substantial long-term complications - hepatic failure, calcium oxalate kidney stones, renal failure, arthritis, and malnutrition [(11)]. The most performed procedures today are LAGB and RYGB, although SG is becoming the primary treatment option in a lot of countries for obese women[(12)].

It is worth mentioning that there are not enough studies about Saudi women awareness of the obstetric and gynecological impact of bariatric surgery. This study aimed to explore the level of awareness among females in Al-Jouf region, Saudi Arabia, towards the obstetric and gynecological outcomes of bariatric surgeries.

Participants and Methods

Study design and setting and data collection tool

A cross-sectional study is conducted on adult women in the Al-Jouf region, Saudi Arabia**,** using an online questionnaire to collect data that was distributed through social media to patients who were visiting or are registered at the primary care centers of Al-Jouf region. Questions related to the level of awareness are included, along with the socio-demographic characteristics of the population, according to Alqahtani et al[(13)]. The study was approved by the research ethics committee, Qurayyat Health Affairs, Ministry of Health (#058-14/2/2020). The inclusion criteria were Saudi female patients within the age range of 15 - 55 years old and the exclusion criteria were non-Saudi female patients and those outside the target age range.

Statistical Analysis:

Descriptive statistics are presented as numbers (n), percentage (%), range (min – max), and mean ± standard deviation, as appropriate. Data were compared using independent t test and one way ANOVA test, as appropriate. A P value of <0.05 was considered statistically significant. All statistical analyses were performed using Statistical Package for Social Science (SPSS) version 22.0 (IBM Corporation, Armonk, New York, USA).

RESULTS:

Three hundred and forty-three female patients responded to our online questionnaire. Only participants who completed all the questions in the survey were included. Socio-demographics of participants and analysis of the questionnaire are shown below.

General Characteristics of Responders:

Out of 334 females responded to this questionnaire, age was subcategorized into five groups, starting with 15 to 24 years old and ending with more than 55 years old. Most of the responders (50%) belonged to the age group 25 to 34 years old, and least number belonged to 45 to 54 years old group (0.3%). Also, the mean body weight for the responders was 74.79 ± 24.835. Turning to the educational level, 88.3% had a university degree or higher, while 4.2% only had an intermediate school education. As for previous bariatric surgery, it was shown that 5.1% had previous surgery, while 94.9% did not have a previous bariatric operation. All socio-demographic data is shown in detail in Table 1.

Table 1: Socio-demographic characteristics and related medical history of the participating Saudi women. Data shown are frequency, n and %.

Item		n	%
Age	15 - 24	54	16.2
	25 - 34	167	50.0
	35 - 44	108	32.3
	45 - 55	5	1.5
Educational level	Intermediate School	14	4.2
	Secondary School	25	7.5
	≥University degree	295	88.3
Previous bariatric surgery	No	317	94.9
	Yes	17	5.1

As for females who had a previous bariatric operation, they were asked about the type of operation that they had. 47% of the females who had a previous operation had more than one operation, while 12% had a gastric band, as shown in Figure 1.

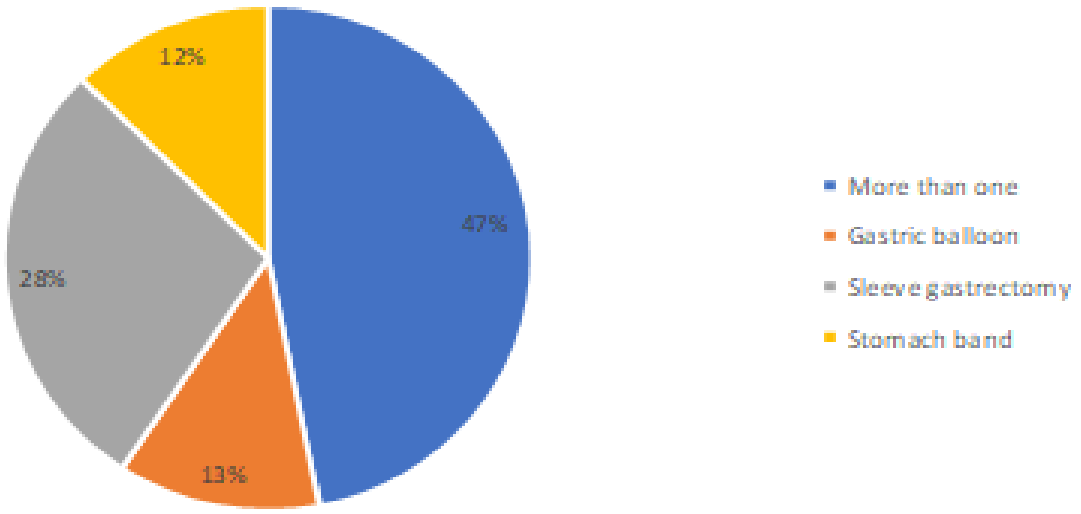

Figure 1: Distribution of participating Saudi women who had previous bariatric surgery according to type of surgery. Data shown are %.

The females were also asked about their source of information about bariatric surgeries. 52.7% of the females mentioned that they got their information from social media, while only 8.7% of the females got their information from friends, as shown in Figure 2.

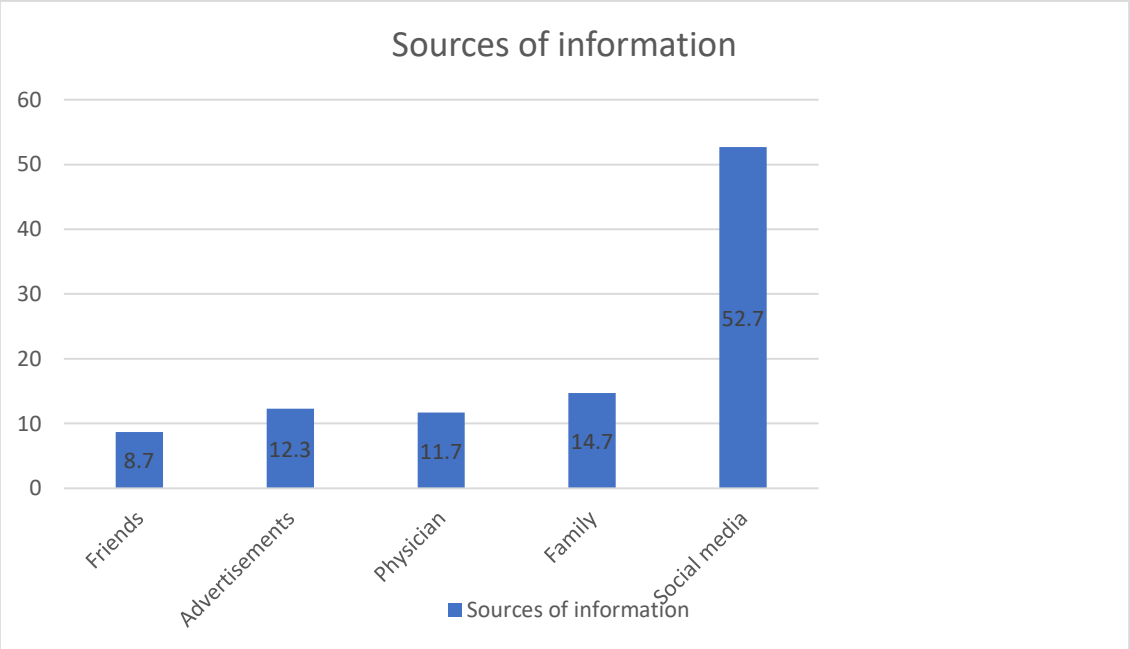

Figure 2: Distribution of participating Saudi women as for their sources of information about bariatric surgeries. Data shown are %.

Also, the responders were asked a set of questions to evaluate their awareness considering the obstetric and gynecological impact of bariatric surgeries. 88.3% of the females mentioned that pregnant females require a nutritionist follow up after bariatric surgery, while 20.1% of responders thought that rate of macrosomia is reduced after bariatric surgery. Moreover, 44.9% agreed that fetuses for females who had bariatric surgery could be exposed to increase risk of vitamin deficiencies, 33.8% of responders believed that females with PCOS improve after bariatric surgery. Only 9% of females thought that bariatric surgeries could increase the risk of congenital malformations. Table 2 shows questions evaluating awareness of obstetric and gynaecological impact of bariatric surgeries.

Table 2: Questions evaluating awareness regarding the obstetric and gynecological impact of bariatric surgeries among the investigated Saudi women. Data shown are %.

Item	Yes	No	I do not know
Does a pregnant woman need a follow-up nutritionist after bariatric surgeries?	88.3	0.3	11.4
Can macrosomia rates decrease after bariatric surgery?	20.1	16.8	63.2
Do fetuses among women who underwent bariatric surgery have increased the risk of vitamin deficiencies?	44.9	14.4	40.7
Do mother bariatric surgeries increase congenital malformations for their fetuses?	9.0	22.5	68.6
Would abortion rates decrease after bariatric surgery?	22.2	16.2	61.7
Do women with polycystic ovary syndrome improve after bariatric surgery?	33.8	7.8	58.4

The score for awareness questions was calculated and compared for different demographic factors. The average score for the whole cohort was 2.18 ± 1.23. The comparison revealed that there was a significant difference among different age groups, where females ageing between 45 and 55 years old had the highest score (3 ± 0.025) than other groups with a P <0.001. Also, there was a significant difference among different educational levels (P <0.001) where females with a secondary school education had a significantly higher score (P <0.001) compared to other educational groups, with a mean score of 3.28 ± 1.621. Additionally, females who had a previous operation showed a significantly higher

score (P = 0.001) compared to those who had no previous surgery, and females who got their information from physicians had the highest levels of awareness compared to other females with a mean score of 3.08 ± 1.133 (P <0.001). The comparison is detailed in Table 3.

Table 3: Correlation of the awareness scores with different sociodemographic variables among the investigated Saudi women.

		Mean	SD	P
Age, Years	15 - 24	2.39	1.497	<0.001
	25 - 34	1.78	1.162	
	35 - 44	2.69	0.981	
	45 – 54	3.00	0.025	
Educational level	Intermediate school	1.00	0.000	<0.001
	Secondary school	3.28	1.621	
	≥University degree	2.15	1.153	
Previous operation	No	2.13	1.182	0.001
	Yes	3.18	1.667	
Source of information	Friends	2.07	1.067	<0.001
	Advertisements	1.37	1.260	
	Physician	3.08	1.133	
	Family	2.14	1.339	
	Social media	2.20	1.107	

DISCUSSION:

Obesity is a significant health problem all over the world, and the number of affected people is on the rise[15]. A national multistage questionnaire that was performed in Saudi Arabia reported that females have a higher obesity rate than males, accounting for 33.5% and 24.1%, respectively, with a total obesity rate of 28.7%[16]. Unfortunately, dieting and behavioral modifications are relatively ineffective in patients with morbid obesity. Until now, surgical intervention "Bariatric surgeries" is the only valid approach for long-term treatment of morbid obesity[17].

The present investigation evaluated the level of awareness of Saudi females in Aljouf region regarding the gynecological and obstetric impact of bariatric surgery. The study demonstrated that the average awareness score for the whole cohort was 2.18 ± 1.23. There was a significant difference among different age groups, where females ageing between 45 and 54 years old had the highest awareness score. Also, females with a secondary school education had a significantly higher awareness score. Additionally, females who had a previous bariatric operation showed a significantly higher awareness score. Females who got their information from physicians had the highest levels of awareness. The level of knowledge and awareness of females towards bariatric surgeries have been evaluated in different settings. Alqahtani et al[14] conducted a cross-sectional study in the Eastern Province of Saudi Arabia. The study showed that about 73.1% of participants were reported to have reduced awareness, and only 3.3% had the right level of knowledge. The rest of the individuals were in the moderate group. Similar to our findings, they also found that highest knowledge was among those who have consulted a physician, underwent bariatric surgery, got information from the internet, and who had multiple sources of information.

Costa et al[17] evaluated the outcomes of bariatric surgery on pregnant females and their fetuses through retrospective analysis. The study revealed that pregnancy following bariatric surgery is generally safe. However, it is essential to monitor pregnant females closely to prevent malnutrition following bariatric surgery. The present study showed that 88.3% of females agreed that pregnant women require a follow up by a nutritionist after bariatric surgeries and 22.2% of females thought that abortion rates

would decrease after bariatric surgery. Basbug et al[18] retrospectively evaluated the impact of laparoscopic sleeve gastrectomy on pregnancy and showed that it could reduce obesity complications during pregnancy, and that the duration between the operation and pregnancy did not correlate to any adverse outcomes on the mother or the fetus. These findings are in agreement with our results and Costa et al[17] findings.

CONCLUSION:

There was low level of awareness of females about obstetric and gynecological outcomes of bariatric surgeries. Females ageing >45 years had lowest level of knowledge, females with a secondary school education had highest level of knowledge compared to other education levels. Females who got their information from physicians had the highest levels of knowledge compared to other females. Therefore, educational programs are needed to improve awareness of the obstetric and gynaecological impact of bariatric surgeries.

Limitations of the Study:

There are few limitations: time constraints, lockdown due to Covid-19 epidemic, the subjective nature of the questionnaire and the study, and , the data collected from one city which limited the chance to generalize the findings to the whole community.

Conflict of interests:

The authors declared no conflict of interests.

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