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Obesity and sexual dysfunction in women

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Abstract---Background; Both overweight and obesity have been identified as risk factors for sexual dysfunction in men, but the relationship between sexual function and amount of body fat in females is still obscure. There are few reported studies in women assessing the relationship between female sexual function index (FSFI) and body weight. Objectives; To determine the sexual function of overweight and obese women. Subjects and methods; The study-included overweight and obese women were randomly chosen. Result; There was statistically significant relation between obesity and arousal, lubrication, orgasm and total FSFI score. Conclusion; Body mass index and obesity may affect sexual function in women. This effect can be seen in all sexual function parameters (libido, arousal, lubrication, satisfaction and orgasm) decreased with rising BMI, although definitive conclusions need to be studied further. Given that obesity can affect sexual function in a variety of its dimensions, and obesity and overweight are related to physical health, healthcare providers try to preserve physical health and improve sexual satisfaction by proposing BMI reduction, which is considered one of the most important factors in mental health so provide the basis for women's health.

Keywords---sexual dysfunction, obesity, female.

Introduction

The increasing prevalence of obesity represents a major public health problem, with an effect on physical, emotional and psychosocial function (1). Obesity and negative body image can have a significant impact on a person's sexual life. Sexual dysfunction may also be related to obesity, but is rarely mentioned, which may cause concern for the affected individual and her partner, causing a great

problem (2). Sexual satisfaction is defined as the affective response arising from one's evaluation of his or her sexual relationship, including the perception that one's sexual needs are being met, fulfilling one's own and one's partner's expectations, and a positive evaluation of the overall sexual relationship(4). The relationship between sexual function/satisfaction and amount of body fat in females is still obscure (5)

The distinction between the terms overweight and obese is based upon structured weight classifications that are determined using a formula that yields a body mass index (BMI), commonly referred to as BMI. BMI formula is based on a person's weight and height, and it is not a direct measure of body fat or obesity. Many of the other aspects of the obese patient's health and well-being, including sexual behavior and sexual health, are overlooked or neglected (6) The adverse effects of obesity on health are well documented (7) We investigated sexual health by BMI. Therefore, the aim of this study was to investigate the association between BMI and sexual function. The aim of this study was to determine the sexual function of overweight and obese women.

Patients and Methods

The study was approved by ethical committee in the faculty of medicine. An official permeation mission was obtained from faculty of medicine Menoufia University. After detailed information informed consent were taken from the patients before beginning of study. This study was done from March 2021 to September 2021 on 90 married Egyptian female according to inclusion & exclusion criteria. This study was conducted on overweight and obese women attending Endocrinology outpatient clinic of Menoufia university hospital.

Inclusion criteria

Premenopausal married women with regular menstrual cycles, absence of underlying diseases, not using drugs that affect sexual behaviors (antihypertensive drugs, thiazide diuretics, antidepressants, antihistamines, barbiturates, amphetamines, diazepine, and cocaine) and absence of stressors in the recent 6 months (parental separation, death of first-degree relatives, and etc).

Exclusion criteria

Pregnant women or 8 weeks postpartum and if they had experienced any of the following: diabetes mellitus uremia, multiple sclerosis, neoplasms, psychiatric problems, cardiovascular disease, gynecologic surgery, lower urinary tract symptoms, pelvic trauma, polycystic ovarian syndrome, abnormal thyroid function and use of any drugs. The studied group will be assessed through the following tools: A questionnaire includes: Sociodemographic characteristics: Personal data as name, age, residence, marital level of education. A questionnaire for Assessment of sexual function. FSFI, which is a validated, 19-item self-report instrument, was used for assessing key dimensions of female sexual function. A total of six domains were analyzed. Specific domains analyzed in the FSFI included sexual desire, arousal, lubrication, orgasm, satisfaction and pain during sexual intercourse:

Anthropometric measures

Height and weight were recorded with participants wearing lightweight clothing and no shoes using a Seca 200 scale (Seca, Hamburg, Germany) with an attached stadiometer. BMI was calculated as weight in kg divided by the square of height in meters (kg m–2). Those with a BMI of C30 kg/m2 were considered obese. The waist-to-hip ratio (WHR) was calculated as the waist circumference in cm divided by the hip circumference in cm.

Statistical Analysis

All data were collected, tabulated and statistically analyzed using SPSS 24.0 for windows (SPSS Inc., Chicago, IL, USA). Data were tested for normal distribution using the Shapiro Walk test. Qualitative data were represented as frequencies and relative percentages. Chi square test (x2) and Fisher exact was used to calculate difference between qualitative variables as indicated. Quantitative data were expressed as mean ± SD (Standard deviation) for parametric and median and range for non-parametric data. Independent T test and Mann Whitney test were used to calculate difference between quantitative variables in two groups for parametric and non-parametric variables respectively.

Receiver operating characteristic (ROC) curve was constructed to permit selection of threshold values for test results and comparison of different testing strategies. Areas under ROC curves and their standard errors were determined using the method of Cantor, and compared using the normal distribution, with correction for correlation of observations derived from the same cases. Value of area under a ROC curve (AUC) indicates: 0.90 – 1 = excellent, 0.80-0.90 = good, 0.70-0.80 = fair; 0.60-0.70 = poor; and 0.50-0.6 = fail. The optimal cutoff point was established at point of maximum accuracy. All statistical comparisons were two tailed with significance Level of P-value ≤ 0.05 indicates significant, p <0.001 indicates highly significant difference while, P> 0.05 indicates Non-significant difference.

Results

The mean age of the studied cases was 34.16 (±5.75 SD) with range (26-48), among the studied cases there were 36 (40%) urban residents and 54 (60%) rural residents and 44.4% of the studied cases were with Secondary education. Table (1). The mean BMI of the studied cases was 30.55 (±5.62 SD) with range (20.5-47.8), among the studied cases there were 15 (16.7%) normal-weight, 31 (34.4%) over-weight and 44 (48.9%) obese. Figure (1). The median desire of the studied cases was 3.6 (2.4–4.8) with range (1.2-5.4), the median arousal was 3.6 (2.78 – 4.5) with range (0-6), the median lubrication was 3 (2.48 – 3.6) with range (0-4.2), the median orgasm was 3.2 (2.8 – 4) with range (0-4.8), the median satisfaction was 4.4 (3.3 – 5.2) with range (0.4-6), the median pain was 2.8 (1.65 – 3.6) with range (0-6.6) and the median total score was 21.6 (16.48 – 24.88) with range (1.6-28.5). Table (2). This table showed that there was statistically significant relation between obesity and arousal, lubrication, orgasm and total FSFI score. Table (3), This table showed that there was statistically significant negative correlation between BMI and total score. Table (4)

Discussion

Sexual function disorders that are more common in women include sexual desire disorders, sexual arousal disorders, orgasmic disorders, and sexual pain disorders. The prevalence of female sexual dysfunction (FSD) has been reported as 43% in the United States of America. Although there are published reports regarding FSD, the accurate incidence of FSD among the infertile women is unknown. The causal factors of infertility, including desire, arousal, orgasm, and pain disorders, can lead to limited or avoided sexual activity, especially around the ovulation time. Studies have shown infertility has a significantly greater effect on female's sense of sexual identity than do other stressors (8). The aim of this study is to determine the sexual function of overweight and obese women.

In this study we found that the mean age of the studied cases was 34.16 (±5.75 SD) with range (26-48), among the studied cases there were 36 (40%) urban residents and 54 (60%) rural residents, and all the studied cases were with high education. Adolfsson et al. (9) reported that obese women aged 18–49 years old experienced the greatest decrease in sexual desire, compared to a normal weight group. Although there were no differences in sexual dysfunction (lack of sexual desire, arousal problems, and painful intercourse) observed among overweight, obese and normal-weight women, Bajos et al. (10) showed a significant trend towards decreasing sexual desire with increasing BMI. In this study we illustrated that there was statistically significant relation between obesity and arousal, lubrication, orgasm and total FSFI score.

Abidin et al. (11) showed that arousal and lubrication were significantly associated with overweight and obesity in patients. This finding was supported by Esposito et al. (13) who claimed that arousal, lubrication; satisfaction and orgasm were affected by obesity. Rezaei et al. (13) found that obese persons in comparison to normal weight ones reported the lack of desire and sexual pleasure, abstention, and difficulties in sexual contact accomplishment. However, Bajos et al. (10) found that there was no difference in sexual dysfunction (lack of sexual desire, arousal, and painful intercourse) between obese or overweight women compared with women with a normal BMI. Nevertheless, the results showed a significant trend towards decreasing sexual desire with increasing BMI ($P = 0.01$).

Another theory on obesity is that obesity can act as a physical barrier to sexual intercourse. If the woman is physically unable to copulate, she will definitely face with sexual dysfunction. Another study described inconvenient conditions such as waist size and improper conditions at copulation to be the major problems in obese women (14). In this study we cleared that there was statistically significant negative correlation between BMI and FSFI scores. Nazarpour et al. (15) found that FSD (FSFI score <26.55) was observed in 61 percent (247) of the women. The total scores of FSFI were in a negative correlation with BMI ($P=0.031$, $r=-0.107$).

Jamali et al. (16) showed the prevalence of FSD to be 87.1% among the infertile Iranian women. He also revealed that the women's BMI was significantly correlated with their sexual function. Karimi et al. (17) found that obesity had a significant correlation with sexual function so that the sexual function score of obese people was lower by 15.87 units than normal people. Also, the sexual

function score of overweight people was 4.67 units lower than normal people. In Yazdznpanahi et al. (18) study, there was a strong and inverse correlation between BMI and arousal, lubrication, orgasm, and satisfaction, while pain and desire did not correlate with BMI.

Arafa et al. (19) found that increased BMI could be linked to higher probabilities of FSD ($p<0.05$, $r=-0.197$). Obesity can be a primary cause of FSD; however it is also associated with metabolic syndrome, diabetes, and cardiovascular disorders; factors that lead to impaired sexual functioning. Female sexual dysfunction attributed to obesity can be explained by the hormonal imbalance caused by insulin resistance, the atherosclerosis of the vasculature supplying the genitalia, in addition to the psychological incompetence caused by low self-esteem and lack of confidence due to imperfect body image (20).

Conclusion

Body mass index and obesity may affect sexual function in women. This effect can be seen in all sexual function parameters (libido, arousal, lubrication, satisfaction and orgasm) decreased with rising BMI, although definitive conclusions need to be studied further. Given that obesity can affect sexual function in a variety of its dimensions, and obesity and overweight are related to physical health, healthcare providers try to preserve physical health and improve sexual satisfaction by proposing BMI reduction, which is considered one of the most important factors in mental health so provide the basis for women's health.

Declarations

Consent for Publication

I confirm that all authors accept the manuscript for submission

Availability of data and material: Available
Competing interests: None
Funding: No fund

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Table 1
Distribution of the studied cases according to Demographic data

History data	Cases (n = 90)	
Age (years)		
Range.	26 – 48	
Mean ± SD.	34.16 ± 5.75	
Residence	No.	%
Urban	36	40.0
Rural	54	60.0
Education		
High education	5	5.6
Secondary education	40	44.4
Primary education	20	22.2
Read and write	15	16.6
Illiterate	10	11.2

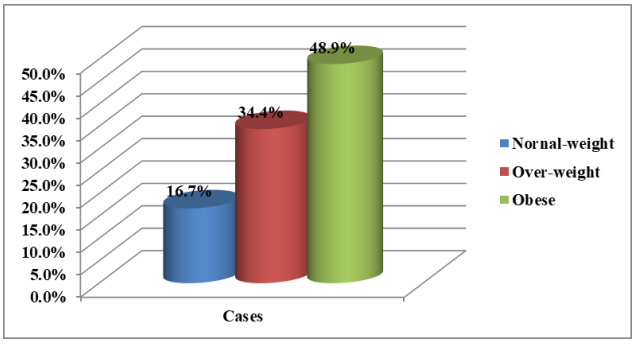

Fig 1. Distribution of the studied cases according to obesity

Table 2
Distribution of the studied cases according to FSFI score

FSFI score	Cases (n = 90)
Desire	
Range.	1.2 – 5.4
Median (IQR)	3.6 (2.4 – 4.8)
Arousal	
Range.	0 – 6
Median (IQR)	3.6 (2.78 – 4.5)
Lubrication	
Range.	0 – 4.2
Median (IQR)	3 (2.48 – 3.6)
Orgasm	
Range.	0 – 4.8
Median (IQR)	3.2 (2.8 – 4)
Satisfaction	
Range.	0.4 – 6
Median (IQR)	4.4 (3.3 – 5.2)
Pain	
Range.	0 – 6.6
Median (IQR)	2.8 (1.65 – 3.6)
Total score	
Range.	1.6 – 28.5
Median (IQR)	21.6 (16.48 – 24.88)

IQR: inter quartile range

Table 3
Relation between obesity and FSFI score

	Obesity			Test of Sig.	p
	Normal-weight (n = 15)	Over-weight (n = 31)	Obese (n = 44)		
Desire					
Range.	1.2 – 5.4	2.4 – 5.4	1.2 – 5.4	3.656	0.161

Median (IQR)	3.6 (3 – 4.8)	3.6 (3 – 4.2)	3 (2.4 – 4.8)		
Arousal					
Range.	0.9 – 6	2.1 – 6	0 – 5.1	12.758	0.002*
Median (IQR)	3.9 (3.3 – 4.8)	4.2 (3.6 – 4.8)	3.3 (2.1 – 4.2)		
Lubrication					
Range.	0 – 3.9	2.1 – 4.2	0 – 4.2	14.307	0.001*
Median (IQR)	3.3 (2.7 – 3.6)	3.6 (3 – 3.6)	3 (2.1 – 3.3)		
Orgasm					
Range.	0 – 4.8	2.4 – 4.8	0 – 4.8	7.567	0.023*
Median (IQR)	3.2 (2.8 – 3.8)	3.6 (3.2 – 4)	3 (2 – 4)		
Satisfaction					
Range.	2 – 6	2 – 6	0.4 – 6	5.047	0.080
Median (IQR)	4 (3.6 – 4.4)	4.8 (4.2 – 5.2)	4.4 (2.8 – 4.9)		
Pain					
Range.	0 – 4.8	1.2 – 4.4	0 – 6.6	3.683	0.159
Median (IQR)	2.8 (2.4 – 4.3)	3 (2.4 – 3.6)	2.4 (1.2 – 3.6)		
Total score					
Range.	5.9 – 26	12.8 – 27.1	1.6 – 28.5	8.256	0.016*

H: Kruskal Wallis test
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$
IQR: inter quartile range

Table 4
Correlation between BMI and FSFI score

	BMI	
	r	p
Desire	-0.191	0.071
Arousal	-0.396	<0.001*
Lubrication	-0.370	<0.001*
Orgasm	-0.273	0.009*
Satisfaction	-0.135	0.206
Pain	-0.271	0.010*
Total score	-0.294	0.005*

r: Spearman correlation coefficient
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$