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Is weight just a number? Relationship between overweight, obesity and domains of sexual functioning among young women

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ABSTRACT

Objectives: Being overweight and obesity, one of the biggest health problems in developing countries, is known to affect reproductive health problems. More and more Polish women are struggling with infertility and sexual dysfunctions. Such complications are often diagnosed to be linked directly with patients' excess weight.
The main objectives of the study were to assess the influence of increased BMI (≥ 25.0) on sexual activity and the prevalence of sexual dysfunctions in overweight and obese women in Upper Silesia. Additionally, the occurrence of health problems existing along with obesity was analyzed.

Material and methods: The study was carried out at the Department of Pregnancy Pathology, Department of Woman's Health, School of Health Sciences in Katowice of Medical University of Silesia in Poland. From 526 examined patients, 38% had normal BMI (18.5–24.9), 27% were overweight (BMI 25–29.9) and 35% were obese (BMI score ≥ 30). The patients answered a completely self-administered questionnaire, which was divided into two parts. The first part consisted of general questions about the patient and her past medical history. The second part was the Polish version FSFI questionnaire. The results obtained from FSFI were analyzed using the STATISTICA program.

Results: Statistically significant ($p < 0.001$) reduction in the level of satisfaction was found in the group of obese women when compared to patients with BMI < 30. Also among obese patients the occurrence of sexual dysfunction (FSFI ≤ 26) was significantly increased ($p < 0.05$). A significantly higher number of patients from an average socio-economic situation suffered from sexual dysfunctions, when compared with patients from good a socio-economic group.

Conclusions: Obesity and being overweight lead to more frequent sexual dysfunctions, especially through prevalence of decreased level of sexual satisfaction. Sexual activity problems may be exacerbated by increased body weight in combination with its comorbidities such as insulin resistance, PCOS, obstetric difficulties and irregular menstruation. What is more, a worse socio-economic situation of women predisposes them to the occurrence of sexual dysfunctions.

Key words: obesity; sexuality; sexual dysfunction, physiological; sexual dysfunction, psychological; overweight

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INTRODUCTION

Obesity, or the pathological increase in the amount of adipose tissue has been widely discussed. Once considered a sign of high social status, nowadays it has become a pandemic that causes numerous health implications [1]. Overweight, assessed as BMI greater than or equal to 25 (Tab. 1), is an extremely common pre-obesity condition [2]. The World Health Organization (WHO) announced that in in 2016 almost 1.9 billion adults were overweight, while 650 million of them were already obese [3].

Obesity, defined as a body mass index (BMI) > 30 (Tab. 1), has become one of the biggest health problems in todays' societies in both developed and developing countries [3, 4].

Table 1. BMI classification [2]

BMI classification	
Underweight	< 18.5
Normal range	18.5–25.9
Overweight	≥ 25.0
Preobese	25.0–29.9
Obese	≥ 30.0
Class I	30.0–34.9
Class II	35.0–39.9
Class III	≥ 40.0

BMI — body mass index

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What is more, according to WHO data, the number of obese people has tripled over past 40 years [5].

Obesity is not just an aesthetic problem, it is also linked to a wide range of health problems such as type 2 Diabetes Mellitus, cardiovascular disease and atherogenic processes. Along with the above the oxidative stress (OS) is induced. Additionally, OS is associated with excessive production of adipokines, which further promotes the progression of the metabolic syndrome [6].

Obesity and being overweight directly affects reproductive health problems. According to WHO, positive reproductive health is a state when a woman's mental, physical and social well-being is satisfactory. It also refers to the proper functioning of the reproductive system and human reproductive functions. Reproductive health depends on many factors, being overweight and obesity definitely affect them negatively [7].

European Health Interview Survey (EHIS) states that from all European Union countries, the average for excess weight is 34.8%, and 15.4% for obesity. Similar tendencies were found in Poland [3]. The Bureau of Research of the Chancellery of the Sejm in 2017 reported that among 19.5 million of Polish women, 30.1% are overweight and 15.6% suffer from obesity [8, 9].

Reproductive age is on average between 15 and 49 years of age. There are over 10 million women at this age in Poland. It has been noticed that their procreative behaviors have changed over recent years. Women become pregnant later and are more often diagnosed with infertility and sexual dysfunctions [10].

The increased body mass index does not only influence the physical health, but also directly influences the mental and sexual health. Being overweight and obesity — visceral obesity in particular, are considered risk factors for sexual dysfunction [11]. Obesity affects several aspects of sexual function in otherwise healthy women, including arousal, lubrication, satisfaction, and orgasm [12].

Mental perception of one's appearance, well-known under the term of body image, is one of the most powerful influences of proper sexual health. It can be observed that that women who have higher Body Mass Index judge their bodies more skeptically [13]. Having said that, it leads to withdrawl from situations in which they could feel concerned about their appearance. Negative opinion about one's body image, including: appearance, health, normal functioning, loss of femininity or sexual attraction, can play a predictive role in development of anxiety and depression [14].

Objectives

The aim of the study was to analyze the influence of obesity and being overweight on sexual activity and the occurrence of sexual dysfunctions in women of Upper Silesia. In addition, the occurrence of diseases coexisting with obesity and factors such as age, marital status and socio-economic status were also taken into account.

MATERIAL AND METHODS

A longitudinal study was carried out at the Department of Pregnancy Pathology, Department of Woman's Health, School of Health Sciences in Katowice of Medical University of Silesia in Poland. The study included 526 patients in which 38% (n = 201) of them had the body mass index (BMI) in range between 18.5 and 24.9, what is assessed as normal BMI. 27% of patients (n = 140) had the BMI in range between 25 and 29.9, and were assessed as overweight. 35% (n = 185) patients were obese wit BMI score > 30. The median age of the studied group was 28 (IQR = 25–32). Exclusion criteria were: incorrectly completed questionnaire, missing data and lack of sexual activity. The university Ethics Committee waived the requirement for informed consent due to the anonymous and non-interventional nature of the study (KNW/0022/KB/68/19).

The full group characteristics are presented in Table 2.

Table 2. The main characteristics of the group

Characteristics		
Age	28	IQR 25–32
BMI		
Normal	201	(38%)
Overweight	140	(27%)
Obesity	185	(35%)
Marital status		
Married	337	(64%)
Informal relationship	163	(31%)
Single	26	(5%)
Education		
Basic	30	(6%)
Secondary	191	(36%)
Higher	305	(58%)
Place of residence		
Village	160	(30%)
Town < 50k	98	(19%)
City >50–200k	114	(22%)
City > 200k	154	(29%)
Economic situation		
Below the average	11	(2%)
Average	261	(50%)
Good	254	(40%)
Pregnancies		
None	89	(17%)
One	226	(43%)
More than one	211	(40%)
Given births		
None	126	(24%)
One	246	(47%)
More than one	154	(29%)

The symbol (%) indicates the percentage of the given data in the test population; IQR — interquartile range; BMI — body mass index

Table 3. Body mass index groups and sexual activity of women

	Normal (n = 201)	Overweight (n = 140)	Obesity (n = 185)	p value
FSFI	29.0 ± 4.9	29.4 ± 4.4	28.0 ± 6.2	> 0.05
Desire	4.2 ± 1.2	4.2 ± 1.1	4.2 ± 1.2	> 0.05
Arousal	4.8 ± 1.0	5.0 ± 0.9	4.7 ± 1.2	> 0.05
Lubrication	5.2 ± 0.9	5.3 ± 0.9	5.0 ± 1.2	> 0.05
Orgasm	4.7 ± 1.2	4.9 ± 1.2	4.4 ± 1.4	> 0.05
Satisfaction	5.2 ± 1.0	5.1 ± 0.9	4.7 ± 1.2	< 0.001
Pain	4.8 ± 1.2	5 ± 1.0	4.9 ± 1.2	> 0.05

FSFI — Female Sexual Function Index

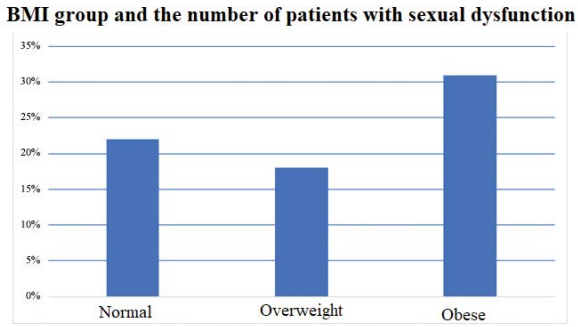

Figure 1. A significant increase in patients with sexual dysfunction in the group of obese women; BMI — body mass index

The completely self-administered questionnaire was provided to the patients at random while waiting for their routine medical check-ups. The first part contained general questions about the patient, as well as an analysis of her obstetric history and questions about coexisting diseases. The second part of the survey was the Polish version of the standardized Female Sexual Function Index (FSFI) questionnaire. It consists of 19 questions about six domains of sexual life: desire, sexual arousal, lubrication, orgasm, sexual satisfaction and pain related to sexual activity [15].

The results were obtained by performing calculations for FSFI according to the relevant instruction manual and using the STATISTICA program.

RESULTS

After analyzing the results, it turned out that in the domain of sexual satisfaction it has been possible to prove a statistically significant ($p < 0.001$) reduction in the level of satisfaction in the group of obese women in relation to women with normal body mass and those who were overweight. Assessing the remaining parameters — desire, sexual arousal, lubrication, orgasm and pain related to sexual activity, no statistically significant differences were noticed between any group: with a normal BMI, overweight or obese (Tab. 3).

Table 4. Influence of selected diseases and clinical situations on female sexuality

	No	Yes	p
Insulin resistance	29.1 ± 4.8	27.1 ± 6.9	< 0.05
PCOS	29.2 ± 4.9	27 0.0 ± 6.3	< 0.05
Gestational diabetes	28.9 ± 5.2	27.7 ± 5.8	> 0.05
Obstetric difficulties	29.4 ± 4.8	27 0.0 ± 6.2	< 0.001
Irregular menstruation	29.4 ± 4.8	27.6 ± 6 0.0	< 0.01

PCOS — Polycystic Ovary Syndrome

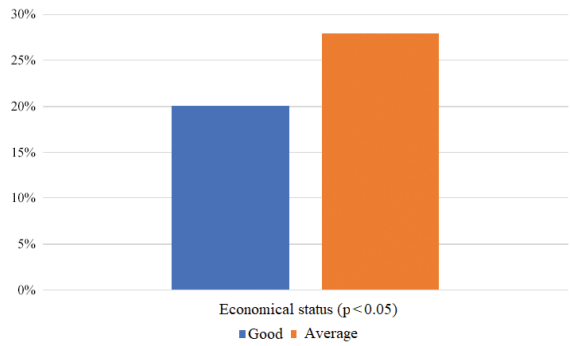

Figure 2. Economic situation in the family and the percentage of sexual dysfunction

However, by testing the groups for the number of patients with sexual dysfunction (FSFI ≤ 26) it was possible to show that obesity significantly increases the number of patients with this problem ($p < 0.05$). The results are shown in Figure 1.

In addition, the influence of selected diseases associated with abnormal body mass on sexual activity of the examined patients was examined (average FSFI score). A statistically significant result of the analysis was obtained for insulin resistance, PCOS, difficulties in getting pregnant and irregular menstruation. However, there was no relationship between sexual activity of women and the occurrence of gestational diabetes. The results are shown in Table 4.

An additional observation noted during the study is the fact that a worse socio-economic situation of women predisposes to the occurrence of sexual dysfunctions (Fig. 2). Sexual dysfunctions were detected in 28% of patients assessing their material status as average. Sexual dysfunctions are less common in a group assessing its economic socio-status as good and the frequency of their occurrence does not exceed 20% of respondents.

DISCUSSION

Sexuality is a complex process, coordinated by the nervous, vascular and hormonal systems. It includes family, social and religious beliefs and may be affected by health status, aging and personal experience [16]. The subject of sexuality

is closely related to the concept of sexual health. The World Human Organization, explains sexual health as a state of physical, emotional, mental and social well-being in relation to human's sexuality [17].

Studies on women's sexuality have been conducted for a relatively short time. Unfortunately, available literature on sexual dysfunctions and their links to weight and general health or other factors is quite limited.

The above study suggests the lack of evidence of obesity influence on sexual dysfunctions. However, being overweight and obesity significantly reduce the sense of sexual satisfaction. Our results correspond with ones obtained by Larsen et al. (2007) [18] and Kolotkin et al. (2006) [19].

Kolotkin et al. (2006) [19] explains these phenomena as an effect of an enhanced frequency of sexual difficulties attributed to patients' weight such as: lack of sexual enjoyment, lack of sexual desire, difficulty with sexual performance, and avoidance of sexual encounters. What is more, the obese commonly experience stigmatization, discrimination, and prejudice because of their weight. Such experiences often lead to the creation of a negative body image by obese people.

Negative body image (BI), especially often reported in women of reproductive age, can lead to many serious consequences. These include eating disorders, depression, unhealthy behavior related to weight control, smoking, reduced physical activity and a reduced health-related quality of life (QOL) [20].

What is more, women with poorer body image, particularly those who experience negative feelings about their physical appearance in a wide range of situations (*i.e.*, situational body image dysphoria), are more likely to report problems of sexual functioning than those who do not experience these types of dysphoria [17, 21]. Scheffers et al. (2018) indicate that in clinically depressed patients, body satisfaction, significantly improves after treatment such as cognitive-behavioral therapy [22, 23].

In our experiment, the sexual activity was significantly lower in groups with insulin resistance, PCOS, obstetric difficulties and irregular menstruation. Most of the mentioned entities are a component of the metabolic syndrome.

Metabolic syndrome is defined by a cluster of medical comorbidities including central obesity, insulin resistance, impaired glucose metabolism, dyslipidemia (hypertriglyceridemia, low high-density lipoprotein cholesterol), and systemic arterial hypertension [24].

Patients with PCOS are struggling with many problems that increase the risk of sexual dysfunction. This disease affects the external appearance — often occurring acne or hirsutism leading to a reduction in the sense of attractiveness, which is manifested by reduced interest in sexual life. The increased BMI of PCOS women results in a decrease in the sense of sexual satisfaction during relationships. Researchers admit that the lack of menstruation also predisposes to sexual dysfunctions, as in patients with normal menstruation sexual dysfunction are found much less frequently [25, 26]. This information is particularly important if one takes into account the fact that in adult women BMI > 25 kg/m^2 significantly increases the risk of menstrual disorders and ovulation, *i.e.* reduces the chances of pregnancy compared to the normal BMI group [27].

Obstetric difficulties may also influence the sexual activity. This subject is also strictly connected with the insulin resistance. It is widely known that the gestational diabetes mellitus may cause the fetus hypertrophy and a result more perinatal complications [20]. Moreover, Restall et al. (2014) states that clinically obese women (with BMI over 30) are more likely to gain excessive weigh during pregnancy when compared to women with a normal BMI. Restall et al. 2014 [28], leading to increased risks of high birthweight with associated risks, such as injuries.

Both, spontaneous injuries and the incision of the crotch performed during the labor affects sexual intercourse. Scientific research on the issue of episiotomy has proven its negative impact on the satisfaction with sexual life. In women who engage in sexual activity and who have had an episiotomy performed during childbirth, dyspareunia and secondary vaginismus is more commonly diagnosed [29–31].

Other disease entities were also correlated with the occurrence of sexual dysfunctions and obesity — in the study of the severity of migraine attacks in obese women, however, no significant compounds were found [32]. It is also suggested that sexual activity problems may be exacerbated by obstructive sleep apnea (OSA). OSA is described as repetitive episodes of upper respiratory tract obstruction, often reported in obese patients [33]. This can cause chronic fatigue, which is a known factor of reduced sexual desire. OSA may become an individual factor leading to sexual dysfunction, however this issue requires further research [34, 35].

The last correlation found in our experiment was the relation between a worse socio-economic situation of women and the more frequent occurrence of sexual dysfunctions. It is hard to explain this fact,however, various authors took that subject into consideration. Spinosa et al. (2019) suggest that lower socioeconomic status more often leads to psychological distress and subsequent emotional eating. Such behavior may lead to increased risk of obesity. At the same time, mentioned distress itself decrease the sexual satisfaction. What is more, obese people with good economic status are able to provide themselves a better healthcare and at the same time they cope better with the side effects of obesity [36, 37].

CONCLUSIONS

The presented study confirms higher incidence of sexual dysfunctions in obese and overweight women. However, there is no correlation between women's sexual activity and the BMI index. For the group with the highest BMI, however, a decreased level of sexual satisfaction was observed. A statistically significant result of the correlation analysis of comorbidities with increased body weight and sexual activity was obtained for insulin resistance, PCOS, obstetric difficulties and irregular menstruation. However, there was no relationship between sexual activity of women and the occurrence of gestational diabetes. The obtained results also suggest that the worse socio-economic situation of women predisposes to the occurrence of sexual dysfunctions.

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