DOI: 10.5455/bcp.20130925023705

Body Mass Index and Sexual Dysfunction in Males and Females in a Population Study

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ÖZET:

Bir populasyon çalışmasında kadın ve erkeklerde vücut kitle indeksi ve cinsel işlev bozuklukları

Obezite ile cinsel işlev bozukluklarının ilişkisi karmaşıktır ve tam olarak açıklığa kavuşmamaıştır. Önceki çalışmaların birçoğu küçük örneklemlerle gerçekleştirilmiştir ve birçok olası değişken kontrol edilmemiştir. Çalışmanın amacı, ulusal olarak temsil edici bir örneklemde yaş, kardiyovasküler sorunlar, diyabet, hipertansiyon, tiroid hastalıkları, uyku bozuklukları, anksiyete ve depresyon değişkenlerinin kontrol edilmesinden sonra, vücut kitle indeksi (VKI) ile şu andaki cinsel işlev bozukluklarının ilişkisinin kadın ve erkeklerde incelenmesidir. Örneklem 4162 olguyu içermektedir (2081 kadın ve 2081 erkek). Erkeklerde en sık raslanan cinsel işlev bozukluğu prematür ejekulasyon (8.8%) iken kadınlarda hipoaktif cinsel istek (13.9%) olarak saptanmıştır. Tek değişkenli analizler erkeklerde hipoaktif cinsel istek ve ereksiyon disfonksiyonunun; kadınlarda ise hipoaktif cinsel istek, cinsellikten zevk almama ve cinsel ağrı yakınmalarının obezite ile ilişkili olduğunu göstermiştir. Çok değişkenli analizler ise yaşın her iki cinsiyette de hemen hemen bütün cinsel işlev bozuklukları ile ilişkili olduğunu ortaya koymaktadır. Aktif cinsel yaşam olmaması, hipoaktif cinsel istek, cinsellikten zevk almama ve ereksiyon bozukluğu riskleri diyabetik erkeklerde daha yüksek bulunmuştur.Kadınlarda depresyon ve anksiyete belirtileri bütün cinsel işlev bozuklukları ile yakın bir ilişki gösterirken, erkeklerde hipoaktif cinsel istek, ereksiyon disfonksiyonu ve prematür ejekulasyon ile ilişkilidir. Her iki cinsiyette de diğer değişkenler kontrol edildikten sonra VKİ cinsel sorunlarla ilişkili değildir. Bu bulgular, obezite ile cinsel işlev bozuklukları arasındaki ilişkinin diğer faktörlerin etkisiyle ortaya çıkabileceğini düşündürmektedir.

Anahtar sözcükler: cinsel işlev bozuklukları, obezite, depresyon, anksiyete

Klinik Psikofarmakoloji Bulteni 2014;24(1):76-83

ABSTRACT:

Body mass index and sexual dysfunction in males and females in a population study

The association of obesity with sexual dysfunctions is complex and far from clear. Most former studies consisted of small samples and did not control several possible confounding factors.

Our aim was to investigate the association of BMI with current sexual dysfunction in males and females in a nationally representative population sample after controlling for age, the presence of cardiovascular disorders, diabetes, hypertension, thyroid diseases, anxiety and depression and also menopause in women. The sample included a total of 4162 subjects (2081 females and 2081males). The most frequent sexual problem was premature ejaculation (8.8%) in males and hypoactive sexual desire disorder (13.9%) in females. Univariate analysis showed that hypoactive sexual desire and erectile dysfunction in males and hypoactive sexual desire, lack of pleasure from sexuality and sexual pain in females were associated with obesity. Multivariate analysis indicated that age was significantly associated with almost all types of sexual problems in both sexes. The risks of having no active sexual life, hypoactive sexual desire, lack of pleasure from sexuality and erectile dysfunction were higher in males with diabetes mellitus. Depression and anxiety were associated with all types of sexual problems in females and with no active sexual life, hypoactive sexual desire, erectile dysfunction and premature ejaculation in men. In both sexes BMI was not associated with sexual problems after the confounding factors were controlled. The association of obesity with sexual dysfunction might be mediated by other factors.

Keywords: sexual dysfunction, obesity, depression, anxiety

Bulletin of Clinical Psychopharmacology 2014;24(1):76-83

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Date of submission:
November 23, 2012

Date of acceptance:
September 25, 2013

Declaration of interest:
H.K., O.O., A.K., S.O., A.D., H.F., D.K., M.A., S.A., Z.U., S.S., H.Y., O.I.: The authors reported no conflict of interest related to this article.

INTRODUCTION

According to the World Health Organisation, obesity is a chronic condition defined by increased body-mass index (BMI>30). Although this definition can be considered as a rough guide because it may not correspond to the same degree of fatness in different individuals, it is useful for a population level study. The prevalence of obesity has been increasing in the world. Obesity has serious consequences for health[1]. The association of obesity with sexual health has also been studied in various samples. The results to date have suggested that obesity is associated with erectile dysfunction in males[2-7]; neural, endothelial, endocrine and psychosocial factors are likely to be involved. Although less widely studied, it has been reported that sexual dissatisfaction[8] and impaired sexual quality of life[9] might also be more common in subjects with obesity. In fact, males who had a high waist circumference, even with a BMI<30, had poor sexual quality of life[10]. A recent study reported that while obese females were less likely to have had a sexual partner in the last year, BMI was not associated with sexual dysfunction[11]. However, another study reported fewer life-time partners in obese males while BMI was not associated with the number of partners in females[12]. Kolotkin et al. reported greater impairment in sexual quality of life in subjects with a higher BMI[9]. It is important to note that there are several kinds of sexual dysfunction in males and females. It has been shown that higher BMI was associated with a lower Female Sexual Function Index (FSFI) score, indicating more frequent sexual dysfunction[13]. The authors also reported negative correlations between BMI and arousal, lubrication, orgasm and satisfaction but not with desire or pain[13].

Most of these former studies included small sample sizes (e.g. 13-14). The study by Bajos and colleagues had a large population sample[11]; however, that study did not investigate the association of BMI with several types of sexual dysfunction like sexual arousal, orgasmic disorder and sexual pain disorder. Another serious limitation of the previous studies was not controlling several possible confounding factors (e.g. 7). It is known that anxiety and depression are more common in individuals with obesity and both anxiety and depression are closely linked with sexual dysfunction[15]. Obesity is a risk factor for cardiovascular disorders, hypertension and diabetes[16]. Cardiovascular diseases are associated with endothelial thickening and have been linked to erectile dysfunction in males[17]. Both male and female hypertensive patients have been reported to have an increased prevalence of sexual dysfunction[18]. Metabolic syndrome and diabetes mellitus, which are closely linked with obesity, have been shown to impact sexuality[17,19-21]. Untreated thyroid problems may also lead to sexual dysfunction[17]. Therefore, a comprehensive analysis must control for these important confounding factors to show the relative contribution of high BMI to sexual problems.

In this study, our aim was to investigate the association of BMI with sexual dysfunction in males and females in a nationally representative population sample after controlling for age, the presence of cardiovascular disorders, diabetes, hypertension, thyroid diseases, depression and anxiety. The model included menopause in women.

METHODS

Population

This report is part of a larger study investigating the prevalence of sleep problems in Turkey. The questionnaire was applied using a face to face sampling survey method to a sample representing the adult population of Turkey. The sampling plan which consisted of 5021 test subjects was created with a multi-stage stratified sampling method from the census population. The sample represented the age, gender, and urban-rural distribution of the Turkish adult population. Block and house selection for sampling was carried out by the

Turkish Statistical Institute (TurkStat). Census addresses were used to reach the houses. The individuals to be interviewed in the houses were selected by using a table of random numbers after listing all the individuals who were 18 years old or older. The response rate was 83%.

The approval of the Ethical Committee (HEK 10/34-25) was obtained from the Scientific Research Assessment Commission of Hacettepe University. Informed consent was signed by the participants. Signed informed consent was obtained before the interview. The research was supported by the Gen İlaç ve Sağlık Ürünleri and Cephalon Pharmaceuticals firms.

Assessment

The presence of sexual problems was evaluated by a self-rated survey designed for males and females separately. Questions regarding absence of active sexual life, hypoactive sexual desire and lack of pleasure from sexuality were common in both sexes. There were also items related with male sexual dysfunctions such as erection problems and premature ejaculation and female sexual dysfunctions such as sexual pain and orgasmic problems. The items on sexual problems were taken from a previous study, supported by the European Union and the Ministry of Health which investigated several aspects of sexual behaviors and health in a Turkish urban population over 1500 subjects[22]. The presence of other medical conditions was also evaluated with a self-rated survey. Depression was assessed with the Beck Depression Inventory Screening Form[23] and Beck Anxiety Inventory Short Form. The cut-off score was 4 for both forms.

Main Outcome Measures

Data Analysis: We used chi-square tests as univariate analysis to compare the frequency of sexual problems in normal weight, overweight and obese subjects. We also compared the non-responders (n=851) with responders (n=4162). Binary logistic regression was used to evaluate the effects of age, marital status, BMI category (normal weight (BMI<25), overweight (BMI 25-30), obese (BMI>30)), presence of cardiovascular disorders, hypertension, diabetes mellitus, thyroid problems and psychiatric problems on the presence of sexual problems in males and females, separately. P<0.01 was reported as statistically significant.

RESULTS

Sample Characteristics

The sample included a total of 5016 subjects (2597 females and 2424males). Complete questionnaires were obtained from 4162 (2081 females and 2081 males) subjects. The age range was 18 to 84 in females (mean±standard deviation: 39.3±13.5) and 18 to 90 (mean±standard deviation: 41.9±16.3) in males. Marital status, socioeconomic variables, the frequency of chronic general medical and psychiatric conditions and BMI groups are summarized in Table 1.

Table 1: Demographics, medical and BMI conditions of the subjects

	Females (n=2081)	Males (n=2081)
Marital Status: Married	1666 (80.1%)	1464 (70.4%)
Cardiovascular diseases	127 (6.1%)	153 (7.4%)
Hypertension	315 (15.1%)	219 (10.5%)
Diabetes Mellitus	158 (7.6%)	110 (5.3%)
Depression	623 (29.9%)	407 (19.9%)
Anxiety	893 (42.9%)	620 (29.8%)
Thyroid disorders	107 (5.1%)	21 (1.0%)
BMI: Normal	869 (41.8%)	952 (45.7%)
Overweight	618 (29.7%)	809 (38.9%)
Obese	594 (28.5%)	320 (15.4%)

Prevalence of Sexual Problems

The frequency of sexual problems in males males and females are summarized in Table 2. The most frequent sexual problem was premature ejaculation (8.8%) in males and hypoactive sexual desire disorder (13.9%) in females.

Responders vs Non-Responders

In males, non-responders (11.4%) had a higher frequency of cardiovascular disorders when compared with responders (7.4%, χ^2=6.4, p=0.017). In women, hypertension was more common in non-responders (19.8%) than responders (15.2%, χ^2=6.6, p=0.013). The BMI group was not significantly different between responders and non-responders.

Obesity and Sexual Problems

Univariate Analysis: Tables 2 and 3 reveals univariate analysis regarding the association between BMI groups and the frequency of sexual problems in males and females, separately. The results suggest that, for most of the variables, both in males and females, the prevalence of sexual problems increased with BMI, indicating a dose-response relationship. However, in males this was statistically significant for hypoactive sexual desire and erectile dysfunction and in females hypoactive sexual desire, lack of pleasure from sexuality and sexual pain. As expected, higher BMI was also associated with cardiovascular disorders, diabetes mellitus, hypertension, thyroid problems and depression (Table 4).

Table 2: The frequency of sexual problems and their association with BMI groups in men

BMI	No Active Sexual Life	Hypoactive Sexual Desire	Do not Take Pleasure from Sexuality	Erectile dysfunction	Premature Ejaculation
Normal weight	7.9%	3.6%	3.9%	5.3%	8.1%
Overweight	8.6%	6.8%	5.6%	7.4%	8.6%
Obese	11.3%	9.1%	7.5%	11.3%	11.6%
Total	8.7%	5.7%	5.1%	7.0%	8.8%
χ^2, p	3.4, 0.18	16.7, <0.001	7.0, 0.03	13.5, <0.001	3.7, 0.16

Table 3: The frequency of sexual problems and their association with BMI groups in women

BMI	No Active Sexual Life	Hypoactive Sexual Desire	Do not Take Pleasure from Sexuality	Sexual Pain	Orgasmic Problems
Normal weight	8.0%	7.5%	10.3%	9.3%	8.8%
Overweight	9.2%	9.2%	13.7%	10.0%	9.9%
Obese	10.6%	12.8%	19.2%	14.8%	12.5%
Total	9.5%	13.9%	11.1%	9.1%	10.2%
χ^2, p	2.7, 0.26	11.7, 0.003	22.9, <0.001	11.8, 0.003	5.4, 0.07

Table 4: Association of BMI with cardiovascular disorders, diabetes mellitus, hypertension and thyroid problems

BMI	Cardiovascular disorders	Hypertension	Diabetes Mellitus	Depression	Anxiety	Thyroid Problems
Normal weight	3.7%	5.2%	2.3%	24.1%	37.0%	2.2%
Overweight	7.7%	14.1%	6.9%	23.1%	33.8%	3.4%
Obese	12.9%	29.1%	13.7%	28.7%	38.9%	4.8%
Total	7.1%	13.6%	6.4%	24.7%	36.4%	3.2%
χ^2, p	94.8, <0.001	359.6, <0.001	158.7, <0.001	10.0, 0.007	6.8, 0.03	17.5; . <.001

Multivariate Analysis: Logistic regression analysis results are summarized in Tables 5 and 6.

Males: The results indicated that in males, older age was associated with all types of sexual dysfunctions (Table 5). Diabetes mellitus was related to hypoactive sexual desire, no active sexual life and erectile dysfunction with ORs ranging from 2.3 to 2.5, but not with premature ejaculation and lack of pleasure from sexuality. Depression was associated with hypoactive sexual desire (OR=2.2), lack of pleasure (OR=2.2) and premature ejaculation (OR=1.7). Anxiety was associated with erectile dysfunction (OR=1.8). Being married was associated with more active sexual life. BMI was not associated with male sexual dysfunction after controlling for the confounding factors.

Females (Table 6): In women, older age was associated with hypoaactive sexual desire and lack of pleasure from sexuality. Anxiety, depression and being married were associated with hypoactive sexual desire, lack of pleasure, sexual pain and orgasm problems. Depression (OR=2.1) and cardiac problems were associated with less active sexual life (OR=1.5). BMI greater than 30 was associated with sexual pain, but this did not reach the defined statistical significance (p=0.02).

Table 5: Multiple regression results indicating the association of age, marital status, cardiovascular disorders, hypertension, diabetes mellitus (DM), psychiatric disorders, thyroid disorders and body mass index (BMI) groups with sexual problems in men.

	No Active Sexual Life		Hypoactive Sexual Desire		Do not Take Pleasure from Sexuality		Erectile Dysfunction		Premature Ejaculation	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Age	1.05	1.04-1.06*	1.07	1.06-1.09*	1.06	1.05-1.08*	1.06	1.05-1.08*	1.0	1.0-1.03*
Depression	0.99	0.65-1.5	2.2	1.3-3.5*	2.2	1.4-3.6*	1.5	0.98-2.4	1.7	1.1-2.5*
Anxiety	1.4	0.98-2.1	1.6	1.0-2.6	1.8	1.1-2.9	1.8	1.2-2.8*	1.5	1.0-2.1
Cardiovascular	1.1	0.67-1.9	1.3	0.73-2.2	.81	0.44-1.5	1.1	0.68-1.9	0.97	0.57-1.6
Hypertension	1.0	0.63-1.6	0.85	0.51-1.4	1.4	0.83-2.4	1.1	0.73-1.9	1.6	.99-2.5
DM	2.3	1.4-3.8*	2.5	1.5-4.3*	1.9	1.1-3.5	2.3	1.3-3.8*	1.5	0.88-2.7
Thyroid disorders	0.97	0.25-3.7	0.28	0.04-2.3	1.4	0.37-5.5	0.99	0.26-3.8	0.34	0.05-2.6
BMI										
Overweight	0.80	0.55-1.2	1.1	0.70-1.8	0.81	0.50-1.3	0.80	0.53-1.2	0.82	0.57-1.2
Obese	1.0	0.65-1.6	1.4	0.82-2.5	1.1	0.60-1.9	1.2	0.72-1.9	1.1	0.67-1.6
Marital Status										
(married)	0.38	0.26-56*	1.1	0.61-2.0	1.3	0.68-2.3	1.4	0.80-2.4	1.2	0.79-1.8

OR: odds ratio, CI: Confidence interval. *p<0.01

Table 6: Multiple regression results indicating the association of age, marital status, cardiovascular disorders, hypertension, diabetes mellitus (DM), depression, anxiety, thyroid disorders and body mass index (BMI) groups and menopause with sexual problems in women.

	No Active Sexual Life		Hypoactive Sexual Desire		Do not Take Pleasure from Sexuality		Sexual Pain		Orgasmic Problems	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Age	1.03	1.01-1.05	1.02	1.0-1.04*	1.02	1.0-1.04*	0.98	0.96-0.99	1.0	1.0-1.04
Depression	2.1	1.5-2.9*	2.5	1.9-3.4*	2.8	2.0-3.8*	2.3	1.6-3.2*	2.4	1.7-3.4*
Anxiety	1.5	1.1-2.2	2.2	1.6-2.9*	1.9	1.4-2.7*	1.8	1.2-2.5*	1.7	1.2-2.4*
Cardiovascular	1.9	1.2-3.2*	1.8	1.1-2.9	1.2	0.70-2.1	1.6	0.83-3.0	1.5	0.85-2.5
Hypertension	0.95	0.62-1.5	0.76	0.51-1.1	0.85	0.55-1.3	0.81	0.47-1.4	0.84	0.54-1.3
DM	1.4	0.87-2.2	1.1	0.71-1.8	1.1	0.70-1.9	1.1	0.55-2.1	1.0	0.61-1.8
Thyroid disorders	1.3	0.71-2.3	1.1	0.67-1.9	1.5	0.90-2.6	1.5	0.83-2.7	1.3	0.77-2.3
BMI										
Overweight	0.86	0.58-1.3	1.0	0.74-1.5	0.80	0.55-1.2	1.3	0.86-1.9	0.84	0.58-1.2
Obese	0.90	0.60-1.4	1.3	0.89-1.8	1.0	0.70-1.5	1.6	1.1-2.5	0.90	0.61-1.3
Marital Status										
(married)	1.0	0.70-1.5	3.4	2.2-5.3*	3.8	2.3-6.2*	7.3	3.4-15.9*	3.5	2.1-5.8*
Menopause	1.4	0.90-2.1	1.4	0.97-2.1	1.5	0.96-2.2	0.60	.33-1.1	1.6	1.0-2.4

OR: odds ratio, CI: Confidence interval. *p<0.01

DISCUSSION

This study reports several interesting findings in a nationally representative population sample. First, the most common self-reported sexual problem was premature ejaculation in males and hypoactive sexual desire in females. The present prevalence numbers, particularly when life-time problems were taken into account, were consistent with previous studies (reviewed in 24).

Second, in univariate analysis, BMI was associated with hypoactive sexual desire in both males and females, with erectile dysfunction in males and with sexual pain and lack of pleasure from sexuality in females. Obesity was reported to be associated with erection problems[2-4]. Consistent with our results, obesity has been reported to be associated with lack of enjoyment from sexual activity and lack of sexual desire before[9]. Although there have been conflicting results[11,12], a number of studies have reported greater sexual impairment in females with higher BMI[9,13]. Therefore, a higher prevalence of sexual problems in subjects with obesity was consistent with some of the previous studies, although the exact nature of the problem might not be the same. Previous studies have showed that BMI was associated with problems in arousal, lubrication, orgasm and satisfaction but not with desire or pain[13,14]. Former studies also reported fewer sexual partners in obese females[11]. However, none of these studies controlled several possible confounding factors which can be related with both obesity and sexual problems, such as psychiatric and medical disorders.

As expected, and consistent with the literature[16], subjects with higher BMIs were at higher risk for cardiovascular disorders, diabetes mellitus, thyroid disorders, hypertension, depression and anxiety. Multivariate analysis indicated that BMI was not directly linked with sexual dysfunctions both in males and females after controlling for these confounders. On the other hand, several other factors associated with sexual problems emerged. The results showed that older age was significantly associated with all types of sexual problems in males. This was consistent with previous studies, which have reported that almost half of sexually active people older than 59 years of age have sexual problems[15]. It has been suggested that lower testosterone levels were associated with worse sexual functioning and erectile dysfunction in aging males[25]. Desire and orgasmic problems were increased in older females[15]. In our study, diabetes mellitus was also an important risk factor for hypoactive sexual desire, absence of active sexual life and erection problems. It is well known that metabolic syndrome and diabetes mellitus lead to sexual dysfunction[17,19,20]. It has been reported that risk of premature ejaculation increased significantly in diabetes mellitus subjects with poor metabolic control[26]. It can be argued that one of the mediators of the association of high BMI with sexual desire problems, lack of pleasure and erection problems could be diabetes mellitus. Hypogonadism may be another mediator, however, we did not have data to verify this in the present study.

Consistent with previous data, both in males and females, anxiety and depression were significantly associated with sexual problems. It has been reported that almost 80% of subjects with depression have sexual problems[27-29], and a significant proportion of patients with schizophrenia also have sexual dysfunctions[30]. Sexual problems in psychiatric disorders might be due to symptoms, social problems related with the primary disorder or psychotropic medications[30-33]. In males, anxiety was associated with erectile dysfunction. Both in males and females, depression was associated with decreased sexual desire and lack of pleasure from sexuality. Depression was also associated with sexual pain and orgasmic problems in females and premature ejaculation in males. The former studies reporting higher prevalence of sexual problems in subjects with high BMI did not control for the presence of psychiatric disorders, which are significantly associated with sexual problems. Our data filled this gap in the literature.

There were some limitations of the study. First

of all, we evaluated each aspect of sexual dysfunction with a single item. This might limit the variability of the data. Second, we did not collect data considering metabolic syndrome, which is an important factor in the obesity – sexual dysfunction link. In fact, BMI is a rough index for obesity and it has been shown that increased waist circumference in males with BMI<30 was related to impaired sexual quality of life[10]. Third, this was a cross-sectional study, and a limitation inherent in this study design made it impossible to comment on causality. Therefore, we reported only associations and longitudinal studies are necessary to establish cause-effect relationships. Fourth, there were a considerable number of non-responders. However, responders and non-responders were quite similar in terms of the studied variables. On the other hand, there were several strengths of the present study. First of all, the sample was a random, nationally representative population sample which makes the findings generalizable. Second, the large sample size allowed us to control for several important factors in a single study, which was clearly very important to assess the relative contribution of obesity to sexual dysfunction in males and females.

The main therapy and prevention of obesity is a combination of energy restriction and increased physical activity. Weight loss and a Mediterranean-style diet may have positive impacts on the sexual life of females with metabolic syndrome (Esposito et al., 2008). Although our results suggested that obesity was not associated directly with sexual dysfunction when other important factors were controlled, weight control is very important in diabetes mellitus and cardiac disorders, which were very significant factors with respect to sexual functioning.

CONCLUSION

In a nationally representative population sample, our results showed that after controlling for the presence of cardiovascular disorders, diabetes, hypertension, thyroid diseases, anxiety and depression, obesity was not associated with any sexual dysfunction in males and females.

References:

1. James WPT. The epidemiology of obesity: the size of the problem. J Intern Med 2008;263(4):336-52. [CrossRef]
2. Esposito K, Giugliano F, Ciotola M, De Sio M, D'Armiento, Giugliano D. Obesity and sexual dysfunction, male and female. Int J Impot Res 2008;20:(4)358-65. [CrossRef]
3. Bacon GG, Mittleman MA, Kawachi I, Giovanucci E, Glasser DB, Rimm EB. Sexual function in men older than 50 years of age: results from health professionals follow-up study. Ann Intern Med 2003;139(3):161-8. [CrossRef]
4. Derby CA, Mohr BA, Goldstein I, Feldman HA, Johannes CB, McKinlay JB. Modifiable risk factors and erectile dysfunction: can lifestyle changes modify risk? Urol 2000;56(2):302-6. [CrossRef]
5. Andersen I, Heitman BL, Wagner G. Obesity and sexual dysfunction in younger Danish men. J Sex Med 2008;5(9):2053-60.
6. Chen JYW, Ng EML. Body mass index, physical activity and erectile dysfunction: a u-shaped relationship from population based survey. Int J Obes 2007;31(10):1571-8. [CrossRef]
7. Ahmed A, Alnaama A, Shams K, Salem M. Prevalence and risk factors of erectile dysfunction among patients attending primary health care centres in Qatar. East Mediterr Health J 2011;17(7):587-92.
8. Adolfsson B, Elofsson S, Rossnet S, Unden AL. Are sexual dissatisfaction and sexual abuse associated with obesity? A population based study. Obes Res 2006;12(10):1702-9. [CrossRef]
9. Kolotkin RL, Binks M, Crosby RD, Ostbye T, Gres RE, Adams TD. Obesity and sexual quality of life. Obesity 2006;14(3):472-9. [CrossRef]
10. Han TS, Tajar A, O'Neill TW, Jiang M, Bartfai G, Boonen S, et al. EMAS group. Impaired quality of life and sexual function in overweight and obese men: the European Male Ageing Study. Eur J Endocrinol 2011;164(6):1003-11. [CrossRef]
11. Bajos N, Wellings K, Laborde C, Moreau C. Sexuality and obesity, a gender perspective: results from French national random probability survey of sexual behaviors. BMJ 2010; 340:c2573. [CrossRef]

12. Nagelkerke NJ, Bernsen RM, Sgaier SK, Jha P. Body mass index, sexual behavior and sexually transmitted infections:an analysis using the NHANES 1999-2000 data. BMC Public Health 2006;6:199. [CrossRef]

13. Esposito K, Ciotola M, Giugliano F, Bisogbi C, Schisano B, Autorino R, et al. Association of body weight with sexual function in women. Int J Impot Res 2007;19(4):353-67. [CrossRef]

14. Yaylali G, Tekeoglu S, Akin F. Sexual dysfunction in obese and overweight women. Int J Impot Res 2010;22(4):220-6. [CrossRef]

15. Saddock VA. Normal Human Sexuality and Sexual Dysfunctions. In Comprehensive Textbook of Psychiatry, 9th Ed, BJ Sadock, VA Sadock, P Ruiz (eds). p:2027-60. Lippincott Williams & Wilkins, Philadelphia.

16. Ezzati M, Lopez AD, Rodgers A, Vander Hoorn S, Murray CJ. Comparative risk assessment collaborative group. Selected major risk factors and global and regional burden of disease. Lancet 2002;360(9343):1347-60. [CrossRef]

17. Perez K, Gadgil M, Dizon DS. Sexual ramifications of medical illness. Clin Obstet Gynecol 2009;52(4):691-701. [CrossRef]

18. Manolis A, Doumas M. Sexual dysfunction: the 'prima ballerina' of hypertension related quality-of-life complications. J Hypertens 2008;26(11):2074-84. [CrossRef]

19. Esposito K, Giugliano D. Obesity, the metabolic syndrome and sexual dysfunction. Int J Impot Res 2005;17(5):391-8. [CrossRef]

20. Ponholzer A, Temml C, Rauchenwald M, et al. Is the metabolic syndrome a risk factor for female sexual dysfunction in sexually active women? Int J Impot Res 2008;20(1):100-4. [CrossRef]

21. Martelli V, Valisella S, Moscatiello S, Matteucci C, Lantadilla C, Costantino A, et al. Prevalence of sexual dysfunction among postmenopausalwomen with and without metabolic syndrome. J Sex Med 2012;9(2):434-41. [CrossRef]

22. CETAD the Sexual Health and Reproduction Health Research in 2006. Istanbul, Turkey. (Turkish)

23. Akturk Z, Dagdeviren N, Ture M, Tuglu C.The reliability and validity analysis of the Turkish version of Beck Depression Inventory for Primary Care. Turkiye Aile Hekimliği Dergisi, 2005;9:117-22. (Turkish)

24. Clayton AH, Hamilton DV. Female sexual dysfunction. Psychiatr Clin North Am 2010;33(2):323-38. [CrossRef]

25. O'Connor DB, Lee DM, Corona G, Forti G, Tajar A, O'Neill TW, et al.. The relationships between sex hormones and sexual function in middle-aged and older European men. J Clin Endocrinol Metab 2011;96(10):E1577-87. [CrossRef]

26. El-Sakka AI. Premature ejaculation in non-insulin-dependent diabetic patients. Int J Androl 2003;26(6):329-34. [CrossRef]

27. Osvath P, Fekete S, Vörös V, Vitrai J. Sexual dysfunction among patients treated with antidepressants: a Hungarian retrospective study. Eur Psychiatry 2003;18(8):412-4. [CrossRef]

28. Michael A, O'Keane V. Sexual dysfunction in depression. Hum Psychopharmacol Clin Exp 2000;15(5):337-45. [CrossRef]

29. Cyranowski JM, Frank E, Cherry C, Houck P, Kupfer DJ. Prospective assessment of sexual function inwomen treated for recurrent major depression. J Psychiatr Res 2004;38(3):267-73. [CrossRef]

30. Kelly DL, Conley RR. Sexuality and schizophrenia: a review. Schizophr Bull 2004;30(4):767-79. [CrossRef]

31. Cutler AJ. Sexual dysfunction and antipsychotic treatment. Psychoneuroendocrinology 2003;28(Suppl1):S69-S82. [CrossRef]

32. Montejo-Gonzalez AL, Llorca G, Izquierdo JA, Ledesma A, Bousoño M, et al. SSRI-induced sexual dysfunction: fluoxetine, paroxetine, sertraline, and fluvoxamine in a prospective, multicenter, and descriptive clinical study of 344 patients. J Sex Marital Ther 1997;23(3):176-94. [CrossRef]

33. Clayton AH, Pradko JF, Croft HA, Montano CB, Leadbetter RA, Bolden-Watson C, et al. Prevalence of sexual dysfunction among newer antidepressants. J Clin Psychiatry 2002;63(4):357-66. [CrossRef]