

Risk factors of overactive bladder syndrome and its relation to sexual function in menopausal women

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ABSTRACT

Background: Overactive bladder syndrome is a common and annoying complication worldwide that could negatively affect the quality of life of afflicted individuals. We aimed to determine the prevalence and risk factors of overactive bladder syndrome and its relation to sexual function in healthy menopausal women.

Methods: This cross-sectional study was done on 340 women aged 45-60 years in Tabriz, northwest Iran, during 2015-2016. Data were collected using a demographic data questionnaire, the Overactive Bladder Syndrome Score, and the McCoy Female Sexuality Questionnaire.

Results: Fifty-six (16.5%), 63 (18.5%), and 10 (2.9%) of the participating women had mild, moderate, and severe overactive bladder syndrome, respectively. Predictors of overactive bladder included: night sweats, central prolapse, episiotomy, varicose disease, illiteracy or education at the primary level, systolic blood pressure >140 mmHg and lack of physical activity. We found a significant difference between the women with and without overactive bladder with respect to the total score and sub-domain scores related to sex partner ($p = 0.029$) and sexual interest ($p = 0.049$).

Conclusions: The prevalence of overactive bladder was quite high in this study. Since sexual dysfunction is not an easy topic to talk about and can affect women's quality of life, physicians should consider talking about these issues besides urinary issues to all middle-aged women.

Keywords: Overactive bladder syndrome, Menopause, Risk factors, Sexual function

Introduction

As defined by the International Continence Society (ICS), overactive bladder (OAB) syndrome is urinary urgency, usually with urinary frequency and nocturia, with or without urinary incontinence (1). OAB syndrome is a common and annoying complication worldwide that could negatively affect the quality of life of afflicted individuals (2). This condition has been under-reported and sometimes remains untreated.

Varying prevalence rates have been reported for this syndrome in different societies. Its overall prevalence in people aged >40 years in Asian and European countries varies from 19.1%-49% (3, 4). Almost all studies have shown that its prevalence increases with age (5, 6). Several demographic and clinical factors can directly cause overactive bladder syndrome. These factors include age, sex, menopause, gravidity, chronic

constipation, high body mass index (BMI), and diseases such as diabetes mellitus, asthma, and hypertension (7-11).

An OAB affects different aspects of quality of life such as sexual function. Some studies have failed to show any negative effect of overactive bladder syndrome on sexual function (12), while others have shown that it has negative effects on sexual function (13, 14).

Salonia et al, in a research study of 227 women, showed that the women with urinary incontinence or lower urinary tract symptoms (LUTS), suffered from sexual dysfunction more than their healthy counterparts (15).

Conclusions from a study by Cohen et al were that, LUTS has a correlation with sexual dysfunction, and OAB is caused by sexual dysfunction (16).

Sacco conducted a research aimed to assess the effect of LUTS on female sexual function. They concluded that LUTS and urgency have an association with sexual dysfunction (17).

Some studies showed that the prevalence of OAB syndrome increases with age (18). Urinary problems are common during menopause, and estrogen therapy could solve some of these problems. It is possible that the signs of menopause have a close relationship with OAB. Some women suffer from this syndrome for years before seeking treatment because of lack of knowledge and shame (19).

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Since research on evaluating sexual health in women is scarce and sexual health problems are not diagnosed in many cases (20-22), we aimed to determine the prevalence and risk factors of OAB syndrome and its relationship with sexual function in healthy menopausal women.

Patients and methods

This cross-sectional study was done in Tabriz, northwest Iran, with a population of about 1.5 million people, during 2016. The protocol of the study was approved by the Ethics Committee of Tabriz University of Medical Sciences (No: 5/4/4976). Sampling was done in two phases, so that 29 urban health-care centers in the city were coded and one-third of the centers were selected randomly. In the second phase, eligible women were identified and selected randomly using the family records in each center. We included women aged 45-60 years with physiological menopause who were sexually active and had no urinary infection. In this study, menopause was defined as lack of menstruation during the past 12 months (23).

The sample size was calculated to be 340 women using a previous study (24) and the prevalence of OAB in the over-50-year population (26.2%) using the following formula and considering $z = 1.96$, $d = 0.05$ and 20% dropout rate.

$$\frac{Z^2 * P * (1 - P)}{d^2}$$

Data were collected using a demographic data questionnaire (15 items), the Overactive Bladder Syndrome Score (OABSS), and the McCoy Female Sexuality Questionnaire. All questionnaires were completed by the second author (EA) via face-to-face interviews. The OABSS is a tool for screening and evaluating the intensity of overactive bladder. It was designed by Homma and colleagues (25) and has four items for assessing daytime frequency (scored from 0 to 2), nocturia (scored from 0 to 3), urgency and urgency incontinence (both scored from 0 to 5). The scores of each item are calculated separately and a total score is obtained. A score of 3 is considered as the cutoff point for diagnosing overactive bladder syndrome. Scores of 3-5 indicate a mild OAB, 6-11 indicate moderate overactivity, and scores of 12 or higher show severe overactivity. The questionnaire was forward and backward translated. Test/re-test reliability was assessed on 30 patients, and intra-class correlation and internal consistency were calculated. A Cronbach's alpha of 0.79 was ultimately obtained.

McCoy's Female Sexuality Questionnaire consists of 17 items in 2 categories and assessed sexual function in 5 domains of sexual interest (4 items), satisfaction with frequency of sexual activity (3 items), vaginal lubrication (3 items), sex partner (3 items), and orgasm (4 items). A total score is obtained by adding the scores of all five domains. The scores of each domain are multiplied by 25. Maximum score of each domain is 100. Total score of the McCoy questionnaire is the sum of every domain. A Cronbach's alpha of 0.81-0.92 was yielded for the domains in the Iranian population (26). Each participant completed three questionnaires. Urine analysis was done for all participants to check for possible urinary

infections. Women with white blood cell (WBC) counts in midstream urine of >3 were excluded. To assess pelvic organ prolapse a three-stage system was used, so that each woman was examined in the dorsal lithotomy position. If the most distal prolapse is more than 1 cm above the level of the hymen (less than -1 cm), it is defined as stage 1, if it is between 1 cm above and 1 cm below the hymen, it is stage 2, and if the most distal prolapse is more than 1 cm below the hymen but no further than 2 cm less than the total vaginal length, it is stage 3 (27).

Data were analyzed using SPSS software, version 16. Descriptive statistics such as mean, standard deviation, and frequency were used. To determine risk factors of OAB syndrome, ANOVA, Chi-square, and Fisher's exact tests were used. Those independent variables whose p values in the mentioned tests, were <0.2 , such as height, education level, consistent exercise, anterior, middle, and posterior prolapse, hemorrhoid, varicose disease, systolic hypertension, mode of delivery, and neonatal birth weight in the last delivery, were inserted in the logistic regression model. To compare the mean sexual function scores and their sub-domains, the general linear model with adjustment for baseline variables was used.

Results

This study was conducted between March to August 2016. Three hundred ninety-three women were enrolled, of which 53 were excluded for lack of inclusion criteria or being unwilling to participate. Housewives made up 99.4% of the participants, 89.9% had primary school education or were illiterate. Moreover, 204 (60%) of the participants had average income. Other baseline and demographic characteristics are shown in Table I.

We found that 56 (16.5%), 63 (18.5%), and 10 (2.9%) of the participating women had mild, moderate, and severe OAB syndrome, respectively. Table II shows risk factors for OAB syndrome. Night sweats, having a middle prolapse, episiotomy, varicose disease, illiteracy or education at the primary level, systolic blood pressure >140 mmHg and lack of physical activity were predictors of OAB.

Table III shows the sexual function of the women with and without OAB syndrome. We found a significant difference between the women with and without OAB with respect to the total score and sub-domain scores related to sex partner and sexual interest.

Discussion

We found that the prevalence of OAB syndrome was 37.9%, of which 18.5% and 2.9% had moderate and severe OAB syndrome, respectively. In a study in Japan, the prevalence of this syndrome among women aged over 40 was estimated to be 20% (11.6% were moderate-to-severe) (28), while Wen and colleagues estimated a prevalence of 2.1% in women aged over 40 in China (29). In Iran, the total prevalence of OAB syndrome was reported to be 18.2% in 15- to 55-year-old women and 26.2% in women aged over than 50 years (24). The difference in prevalence rates reported in different studies could be attributed to difference in population, data collection

TABLE I - Demographic characteristics of the participants

Variables	Frequency (%)
Age (year) (mean \pm SD)	54.3 \pm 4.0
Duration of menopause (month)	25 (6.1)
Systolic blood pressure (mmHg)	12.1 (18.3)
Body mass index (mean \pm SD)	28.4 \pm 8.7
Last delivery type	
Vaginal with episiotomy	68 (20)
Vaginal without episiotomy	203 (59.7)
Cesarean	63 (18.6)
Varicose disease	141 (41.8)
Hemorrhoid	78 (22.9)
Night sweats	166 (48.8)
Hot flashes	235 (69.1)
Exercise status	
Regular exercise	26 (7.6)
Irregular exercise	72 (21.1)
No exercise	212 (62.4)
Diabetes	25 (7.3)
Constipation	122 (35.8)
Chronic cough	14 (4.1)
blood pressure	82 (21.1)
Grade II or III prolapse	
Anterior	158 (46.5)
Middle	108 (31.8)
Posterior	46 (13.5)

TABLE II - Predictors of overactive bladder (OAB)

Variable	Odds ratio	CI 95%	p value
No night sweats	0.288		<0.001
Having night sweats (ref)	(0.155-0.535)		
No middle prolapses	0.328		0.002
Having reference prolapse	(0.162-0.664)		
No episiotomy	0.484		0.048
Episiotomy (ref)	(0.225-1.037)		
No varicose disease	0.414		0.006
Having varicose disease (ref)	(0.152-0.542)		
High school education/diploma	0.337		0.012
Illiteracy or education at the primary level (ref)	(0.172-0.511)		
Systolic blood pressure <40 mmHg	0.514		0.021
Systolic blood pressure >140 mmHg (ref)	(0.182-0.742)		
Regular exercise*	0.114		0.001
No regular exercise (ref)	(0.052-0.371)		

*Three times a week, 30 minutes jogging.
Adjusted R square = 0.12.

tools, and different definitions of OAB (24). In our study, night sweats, middle prolapse, episiotomy, varicose disease, systolic blood pressure, lack of education, and lack of consistent exercise were predictors of moderate and severe OAB syndrome. Night sweats were a risk factor in our study. In general, estrogen deficiency is a risk factor for OAB syndrome and estrogen therapy is currently a recognized treatment for the syndrome (30, 31). These results are consistent with previous studies (8, 19). Therefore, it is expected that night sweats, as a key sign of estrogen deficiency, will be among the predictors of OAB syndrome.

The existence of stages 2 and 3 middle prolapse was among the other risk factors for OAB. In a study of 1004 women in Spain, the researchers found that women who had pelvic organ prolapse suffered from OAB syndrome 6 times more than women who did not, and 7 times more than women with prolapsed bladder (32). This finding is also consistent with another similar study (3). In the present study, episiotomy was identified as a risk factor for OAB syndrome. Results of different studies are varied and controversial (33-35).

Systolic blood pressure of more than 140 mmHg was another predictor of OAB syndrome in our study. Correlation between blood pressure and OAB is also controversial. Jo et al (36) in his study of 926 individuals, could not show any relation between OAB and blood pressure (36). While Jo et al (36) and Sobhgol and Charandabee (35), in two separate studies, showed that high blood pressure has meaningful correlation with overactive bladder (35).

Our findings regarding the relationship between educational level and OAB syndrome were consistent with other studies showing that lower educational level was a possible risk factor (7, 36, 37), because of unsuitable diet and exposure to toxins and lack of health-enhancing behavior. We found that age did not predict OAB syndrome, which was inconsistent with other studies (37, 38). Although weight and age were among the variables related to OAB in two variable tests, they were not evident in the final logistic regression model.

With respect to sexual function and its relationship with OAB syndrome, we found that women with OAB had lower scores in all sub-domains of sexual function and lower total scores after adjusting baseline variables compared to women who did not have an OAB. However, this difference was only significant with respect to sex partner and satisfaction domains. The total sexual function score also differed significantly between women with moderate and severe bladder syndrome and those without the syndrome. The results of related studies are controversial. Patel and colleagues found that OAB and urinary symptoms were not predictors of sexual function (12). They evaluated sexual function using the Personal Experience Questionnaire whose items are adapted from MacCoy's questionnaire. On the other hand, Alatas and co-workers used the Female Sexual Function Index (FSFI) questionnaire and found that OAB syndrome significantly and negatively affected sexual function in domains such as arousal, vaginal lubrication, orgasm, and pain (39). Zabariou and colleagues found that OAB syndrome had a significant effect on pain, sexual interest, arousal, and vaginal lubrication using the FSFI (40).

The study of Sacco et al (17), which was conducted on menopausal women, using the pelvic organ prolapse/

TABLE III - Comparison of the mean score of sexual function in the women with and without overactive bladder (OAB) syndrome in terms of total score between 0-100

Variables	With OAB syndrome mean (SD)	Without OAB syndrome mean (SD)	AMD 95% CI	p value*
Total score of McCoy	37.4 (13.3)	37.5 (14.8)	5.3 (1.1-9.4)	0.012
Relations with spouse	61.5 (19.5)	71.1 (22.1)	1.6 (0.5-2.5)	0.029
Orgasm	34.7 (16.6)	35.4 (19.1)	0.6 (-0.6-1.8)	0.287
Sexual interest	20.9 (19.4)	28.7 (21.1)	1.37 (0.06-2.7)	0.049
Satisfaction	26.1 (18.7)	30.3 (18.9)	0.76 (-0.2-1.6)	0.135
Vaginal lubrication	45.0 (23.5)	48.0 (28.8)	0.74 (-0.4-1.9)	0.238

* Linear general model with adjusted basic variables

AMD = adjusted mean difference; CI = confidence interval; SD = standard deviation.

urinary incontinence sexual questionnaire (PISQ-12) showed that OAB is the most effective factor with relation to female sexual function. They expressed urge incontinency as a confounder (17).

The study by Cohen et al showed that LUTS is a common health problem among women and leads to sexual dysfunction. OAB has a strong impact on sexual desire, orgasm, vaginal lubrication and sexual satisfaction (16).

In another study using the Sexual Quality of Life Questionnaire – Female and the OAB Questionnaire on women with a mean age of 48.4 years, the researchers found that OAB syndrome affected arousal, vaginal lubrication and orgasm, and significantly decreased sexual function (41). Different questionnaires, sample sizes, and study power are among the possible reasons for these contradictory findings.

This study has a limitation. Identifying women with OAB syndrome using only questionnaires was among the limitations of this study. The cross-sectional design of the study is another limitation. Cross-sectional design methods do not show cause and effectiveness, hence, caution should be taken when interpreting the results.

Conclusion

The prevalence of OAB was quite high in this study. Physicians and healthcare workers should have necessary information regarding its management. Moreover, since sexual dysfunction is not an easy topic to talk about and can affect women's quality of life, physicians should consider talking about these issues as well as urinary issues to all middle-aged women.

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