

Overactive bladder: A multicenter study in Pakistan

Masood Ahmed Sheikh¹, Ahmed Fawad², Khalid Javed Rabbani³, Syeda Batool Mazhar⁴, Shahzad Ali⁵, Haleema Yasmin⁶, Salman EL-Khalid⁷, Waqar Azim Niaz⁸, Humma Quddusi⁹, Muhammed Akhtar Anwer¹⁰, Bakhtawar Gul¹¹, Sajid Mumtaz Qazi¹²

Abstract

Objective: To determine the overall prevalence of overactive bladder in Pakistan, and to determine the difference in prevalence in relation to gender.

Method: The multicenter study was conducted from February 2017 to October 2018 at 10 institutions across the country, and comprised randomly selected healthy subjects of either gender who were assessed on the basis of symptoms defined by the International Continence Society for overactive bladder. Data was collected using a questionnaire based on the symptoms which was filled for the respondent by designated health workers. Data was analysed using SPSS 23.

Results: Of the 1291 respondents, 632(49%) were males with a mean age of 37.8 ± 14.4 years, and 659(51%) were females with a mean age of 38.3 ± 13.7 years. The overall prevalence of overactive bladder was 82(6.4%). Among the males, it was 15(2.4%) and among the females 67(10.2%) ($p=0.001$). Urgency, frequency and nocturia were reported by 82(6.4%) respondents; 15(1.2%) males and 67(5.2%) females ($p=0.001$).

Conclusion: The prevalence of overactive bladder was found to be low when assessed with strict application of the three classical symptoms of the condition.

Keywords: Overactive bladder, Prevalence, Urinary symptoms. (JPMA 72: 17; 2022)

DOI: <https://doi.org/10.47391/JPMA.20-1463>

Introduction

Overactive bladder (OAB) has been defined by the International Continence Society (ICS) as a storage symptom syndrome of the lower urinary tract symptoms (LUTS). It is characterised by urinary urgency with or without urge incontinence, usually with frequency and nocturia, in the absence of confirmed infection or other pathology.¹ It is a prevalent condition in both men and women and has a significant impact on the overall quality of life (QOL), sexual function, sleep and mental health.² OAB is one of the common clinical manifestations of voiding dysfunction which is characterised by involuntary detrusor contractions that may occur spontaneously or may be provoked which the patient is unable to suppress. The

diagnosis is usually based on subjective symptoms. However, a large proportion of patients do not report the condition to their physicians, perhaps because of embarrassment or because of the mistaken notion that no effective treatment is available.

An estimated 455 million individuals worldwide experienced OAB in 2008 with numbers expected to increase to 500 million in 2013 (10% increase) and 546 million by 2018 (20.1% increase).³

Several epidemiological studies have been carried out worldwide on OAB whose figures range from 8% in Finland⁴ to as high as 53.1% in Asian women.⁵ The prevalence in a community will differ depending on the understanding of the survey questions asked as well as how severe the respondents feel about these symptoms.

The current study was planned to determine the overall OAB prevalence in Pakistan, and to determine the difference in prevalence with respect to gender.

Subjects and Methods

The multicenter study was conducted from February 2017 to October 2018 at 10 institutions across the country. After approval was taken from Ethical Review Board and data collection was commenced. The scope of the survey was limited to questionnaire only. OAB prevalence of 6.4% was noted in a pilot survey conducted on 75 subjects in February 2017 prior to calculating the sample size for the current study using the Clopper-Pearson formula⁶ with

¹Department of Urology, Orthopaedic and Medical Institute, Karachi, Pakistan;

²Department of Urology, Ziauddin University, Karachi, Pakistan; ³Department of Urology, Lahore Medical and Dental College, Lahore, Pakistan; ⁴Department of Gynaecology and Obstetrics, Shaheed Zulfiqar Ali Bhutto Medical University (SZABMU), Islamabad, Pakistan; ⁵Department of Urology, Jinnah Postgraduate Medical Center, Karachi, Pakistan; ⁶Department of Gynaecology and Obstetrics, Jinnah Postgraduate Medical Center, Karachi, Pakistan; ⁷Department of Urology, The kidney center, Karachi, Pakistan; ⁸Department of Urology, and Transplant Surgery, Quaid e Azam International Hospital, Islamabad, Pakistan;

⁹Department of Gynaecology and Obstetrics, Nishtar Medical University, Multan, Pakistan; ¹⁰Jinnah Postgraduate Medical Center, Karachi, Pakistan;

¹¹Department of Urology, Institute of Kidney Diseases, Hayatabad, Peshawar, Pakistan; ¹²Department of Urology, Pakistan Institute of Medical Sciences, Islamabad, Pakistan.

Correspondence: Masood Ahmed Sheikh. Email: sheikh.masooda@gmail.com

two-sided 95% confidence interval (CI). The sample was raised from among randomly selected apparently healthy subjects, through Non-probability consecutive sampling, who were either accompanying some patient or who did not come to the medical facility for any medical reasons. Those who came in with any urinary symptoms were excluded.

Based on OAB symptoms defined by the ICS, a questionnaire was developed in the local Urdu language on the pattern of symptom assessment tool for overactive bladder symptom score (OABSS).⁷ The scoring system was not employed, and, instead, direct answers of positive and negative questions were noted. A 4-week recall method was used. The questionnaire was pretested in the pilot study for ease of understanding of the questions. Very minor alterations were needed for the final questionnaire. The ICS symptoms of OAB used in the current study were urinary frequency, nocturia, and urgency or urge incontinence. The survey also included questions on stress incontinence.

Frequency was measured with 3 options: up to seven times, 8-14 times, and 15 times or more.

For nocturia, the options were: 'never', 'once a night', 'two times' and 'three times or more'.

Urgency, urge incontinence and stress incontinence were graded as 'never', 'less than once a week', 'more than once a week', 'once a day', '2-4 times a day', and '5 or more times a day'.

Verbal consent was taken from all the subjects.

Data was collected using the questionnaire which was filled for the respondent by the researchers.

Frequency was considered abnormal if it was 8 times or more. Nocturia was considered if it was more than 2 times. Urgency response, urge incontinence and stress incontinent were taken as abnormal if any of these occurred at least once a day.

Data was analysed using SPSS 23. Effect modifiers, such as age, gender and urinary/urgency symptoms were classified into groups. Qualitative variables were presented with frequencies and percentages. Students t test was applied for the mean comparison of age after verifying normality through Shapiro-Wilk test. Association of gender and age groups with the occurrence of symptoms were tested using the Chi-square test of independence. $P < 0.05$ was considered statistically significant.

Results

Of the 1326 subjects approached, 1291(97.3%) forms were

correctly filled; 632(49%) males with a mean age of 37.8 ± 14.4 years, and 659(51%) females with a mean age of 38.3 ± 13.7 years. The age difference was not significant in terms of gender ($p=0.86$). The largest age group was 21-30 years, having 457(39.8%) subjects (Table 1).

The overall prevalence of overactive bladder was 82(6.4%). Among the males, it was 15(2.4%) and among the females 67(10.2%) ($p=0.001$).

With regards to the symptoms, urgency, frequency and nocturia were reported by 82(6.4%) respondents; 15(1.2%) males and 67(5.2%) females ($p=0.001$) (Table 2).

Urinary urgency was reported >5 times a day by 33(2.6%) subjects; 10(30.3%) males and 23(60.7%) females ($p=0.001$) (Table 3).

Urgency in different age groups with gender distribution showed that the symptom increased with advancing age and was maximally seen in those aged >50 years (Table 4). The overall OAB prevalence was 82(6.4%). Among the males, it was 15(2.4%) and among the females 67(10.2%) ($p=0.001$). Urge incontinence was reported by 127(9.8%) subjects; 15(1.2%) males and 112(8.7%) females.

Urge incontinence was reported by 135(10.4%) subjects less than once a week, 58(4.5%) had it more than once a

Table-1: Age and gender distribution within the sample.

Age Groups (years)	Male	Female	Cumulative n (%)
14-20	23	34	57 (4.4%)
21-30	237	220	457 (39.8%)
31-40	135	140	275 (61.1%)
41-50	129	147	276 (82.5%)
51-60	54	81	135 (93.0%)
61-70	34	30	64 (97.9%)
71-80	15	7	22 (99.6%)
81-85	5	0	5 (100%)
Total	632	659	1291
Mean $\pm$ SD	37.8 ± 14.4	38.3 ± 13.7	38.0 ± 14.0
Median age (years)	34	38	35
$t=0.62, p=0.86$			

SD: Standard Deviation.

Table-2: Frequency of overactive bladder (OAB) symptoms with respect to gender.

Symptoms of urgency, frequency and nocturia	Gender		p-value, Chi-Square Test
	Males n (%)	Females n (%)	
Urgency alone (n=279)	95 (7.3)	184 (14.2)	0.001*, 32.0
Urgency and Nocturia (n=166)	39 (3.0)	127 (9.8)	0.001*, 49.8
Urgency and frequency (n=103)	24 (1.8)	79 (6.1)	0.001*, 32.0
Frequency and Nocturia (n=140)	38 (2.9)	102 (7.9)	0.001*, 32.1
Urgency and frequency and Nocturia (n=82)	15 (1.2)	67 (5.2)	0.001*, 34.0

Day time frequency ≥ 8 times; *: significant; Nocturia ≥ 2 and urinary urgency: once/day or $>$

Table-3: Gender frequency of urinary urgency.

Urinary urgency	Males n (%)	Females n (%)	n (%)	p-value, Chi-Square Test
Never	484 (55.2)	393 (44.8)	877 (67.9)	0.001*, 18.8
< Once in a week	26 (40.0)	39 (60.0)	65 (5.0)	0.02*, 5.2
> Once in a week	27 (38.6)	43 (61.4)	70 (5.4)	0.01*, 7.3
Once in a day	51 (38.6)	81 (61.4)	132 (10.2)	0.001*, 13.6
2-4 times in a day	34 (29.8)	80 (70.2)	114 (8.8)	0.001*, 37.2
> 5 times in a day	10 (30.3)	23 (69.7)	33 (2.6)	0.001*, 10.2

* Significant difference

Table-4: Comparison of urgency with respect to gender within different age groups.

Age Group (years)	Urgency in Females n (%)	Urgency in Males n (%)	p-value, Chi-Square
14-30	49 (19.3) (n=254)	30 (11.5) (n=260)	0.01*, 6.0
31-50	89 (31.0) (n=287)	36 (13.6) (n=264)	0.87 ns, 0.02
51-70	41 (36.9) (n=111)	21 (23.9) (n=88)	0.05*, 3.91
>70	5 (71.4) (n=7)	8 (40.0) (n=20)	0.16 ns, 1.97
Total	184 (27.9) (n=659)	95 (15.0) (n=632)	0.001 *, 31.7

*: significant; ns: nonsignificant.

week, 55(4.3%) had it once a day, 57(4.4%) had it 2-4 times a day and 15(1.2%) experienced it 5 times a day.

Stress incontinence was reported by 71(5.5%) respondents; 14(1.0%) males and 57(4.5%) females ($p=0.001$).

Discussion

To the best of our knowledge, the current study is the first multicenter analysis of OAB symptoms from Pakistan. Epidemiological studies conducted worldwide have demonstrated that the frequency of OAB ranges from 2% to 53%,⁸ depending on the target population and the OAB definition.

A study noted that there are notable inconsistencies across epidemiological studies showing OAB prevalence rates from 7% to 26%. These have been attributed to the differences in the questions used for symptom assessment, mode of questionnaire, administration, study population and symptom definitions.^{3,4,9} Historically, imprecise definitions of OAB had significantly hindered the epidemiological studies, but since the coding of OAB by the ICS, there has been a significant advancement in this field.¹⁰

The current study strictly applied the ICS definition¹ and the questionnaire was administered by medical practitioners, resulting in a lower OAB prevalence.

A study using a computer-assisted telephone interview

(CATI) questionnaire⁹ in the United States defined OAB without urge incontinence as a feeling of urgency 4 times or more in a month and 8 micturations in a day along with patients using other strategies like restricting fluids etc. It showed an overall prevalence of 16% in men and 16.9% in women. An epidemiological study from Japan¹¹ comprising 4,570 respondents showed OAB prevalence of 12.4% (men 14%, women 11%). It had defined OAB as 8 or more voids per day and one or more urgency episodes per week.

The results of sensitivity analysis in the study¹¹ showed that when threshold for the daily voiding frequency was increased from 5 to 15 times and the urgency frequency was fixed at once a week, the prevalence of OAB decreased from 14% to 2%. Conversely, when the urgency frequency threshold was increased from less than once per week to once a day and the threshold of daily voids was fixed at 8, the prevalence decreased from 21% to 7%. This is consistent with the findings of 6.4% in the current study which took urgency frequency at least once a day and day-time frequency at 8 or more voids.

In the present study, the prevalence of OAB increased with advancing age. The number of elderly population surveyed was, however, smaller as the elderly are reluctant to take part in any survey, take their health condition as their fate and part of the aging process, do not visit hospitals unless in distress and women are especially shy in answering questions related to urgency and incontinence.^{8,10,11}

A large study on OAB, called the European Prospective Investigation into Cancer and Nutrition (EPIC) study¹² was conducted in five countries, including Canada, Germany, Italy Sweden and the United Kingdom, with over 19,000 participants, and showed an overall prevalence of 11.8%, with similar rates in men and women. Within genders, men had a prevalence of 10.8% and women 12.8% which increased with age in both genders.

In the present study, the overall OAB prevalence was 6.4%; men 1.2% and women 5.2%. If the urgency of a lesser degree was taken as abnormal, the figures would have gone much higher. Additionally, if nocturia had been taken to be positive at one or more times, the prevalence would, again, have been much higher.

Nocturia is one of the most bothersome symptoms. In the EPIC study¹² if frequency of nocturia was taken as one or more voids per night, 48% men and 54.5% women reported the symptom. But if they defined nocturia as 2 or more voids per night, their prevalence would decrease to 20.9% in men and 24% in women. The current study observed that nocturia of one or more voids was seen in

59.7% and at 2 or more voids per night was seen in 27.6% respondents, which is quite similar to the EPIC study.

In the present study, urgency, which is the cardinal symptom of OAB, was reported in 21.6% (men 7.3%; women 14.2%) by the criteria that was employed, but if we define urgency as once a week or more, the prevalence increases to 30.2%. In the epidemiology of LUTS (EpiLUTS) study,² urgency in isolation was present in 15.6% of men and 10.9% of women which differs from the current findings. In Japan¹¹ it was 14% for one or more urgency episodes per week. In one study, it was 15%.¹¹ The current study showed urgency and nocturia in 12.8% (men 3%; women 9.8%). Urgency and frequency were present in 8% (men 1.8%; women 6.1%).

Other Asian epidemiological studies, like the one from Iran⁸ used ICS definition for a prevalence study of OAB in women. There were 8748 respondents aged 15-55 years. The overall prevalence was 18.2% which increased from 10.9% in those aged 15-29 years to 26.2% in those >50 years. It reported that the prevalence was higher in Iranian women due to the difference in population, collecting tools and different definitions of OAB having been used.

In a South Korean study,¹³ a telephone survey was conducted on 2,000 men and women aged >18 years, using the ICS definition. It reported an overall OAB prevalence of 12.2% (10% men; 14.3% women). Telephone surveys are liable to error because at times the respondent may not have understood the question fully and they are unable to ask for clarification due to time constraints on the phone.

A study in China, Taiwan and South Korea in 2017¹⁴ comprised 8248 people aged >40 years. Overall prevalence was 20.8% (women 22.1%; men 19.5%) which increased significantly with age from 10.8% to 27.9% at age >60 years.

In the present study, urgency and urge incontinence was 9.8% (men 1.2%; women 8.7%), and wet OAB was reported by 45.5% respondents. A study⁹ reported a prevalence of urge incontinence which increased with age from 2% to 19% in women with a marked increase after 44 years of age, and from 0.3% to 8.9% in men with a marked increase after 64 years age. Across all age groups, OAB without urinary incontinence was more common in men than women. The current study also had urinary incontinence more prevalent in women. In Japan,¹¹ OAB prevalence with and without urgency incontinence (one or more episodes per week) were 6.4% and 6% respectively.

Overall stress incontinence was 5.5% and it was more prevalent in females, which was close to the rates reported in literature.^{4,15,16}

It is clear that there is still no global agreement on OAB prevalence. Most epidemiological studies done so far have differed on even a range of incidence rates. Not only there are no fixed quantitative defined figures of the frequency of the episodes of urgency, day-time frequency and nocturia, with terms like 'rarely', 'sometimes', 'mostly' and 'often' being used, but also in terms of qualitative definitions of the classical symptoms to define the severity of the symptoms, like 'mild', 'moderate' and 'severe'. These ultimately have a significant bearing on the results.

Conclusion

The prevalence of overactive bladder was found to be low when assessed with strict application of the three classical symptoms of the condition.

Acknowledgement: We are grateful to the LUTS Research Group, Pakistan.

Disclaimer: The study data was presented at the First Pakistan Colloquium on lower urinary tract symptoms (LUTS), held in Rawalpindi, Pakistan, on July 13-14, 2019.

Conflict of Interest: None.

Source of Funding: None.

References

1. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardization of terminology of lower urinary tract function: report from the Standardization Sub-committee of the International Continence Society. *Neurourol Urodyn*. 2002; 21:167-78.
2. EapenR, Radomski S. Review of the epidemiology of overactive bladder. *Res Rep Urol*. 2016; 8:71-6.
3. Irwin D, Kopp Z, Agatep B, Milsom I, Abrams P. Worldwide prevalence of lower tract symptoms, overactive bladder, urinary incontinence and bladder outlet obstruction. *BJU*. 2011; 108:1132-8.
4. Tikkinen KA, Tammela TL, Rissanen AM, Valpas A, Huhtala H, Auvinen A. Is the prevalence of overactive bladder overestimated? A population-based study in Finland. *PLoS One*. 2007; 2:e195.
5. Lapitan MC, Chye PL. Asia-Pacific Continence Advisory Board. The epidemiology of overactive bladder among females in Asia: A questionnaire survey. *Int Urogynecol J*. 12:226-31.
6. PASS 2020, Version 20.0.5. Power Analysis and Sample Size Software. [Online] [Cited 2021 February 19]. Available from: URL: [www.http://ncss.com/software/pass](http://ncss.com/software/pass).
7. Homma Y, Yoshida M, Seki N, Yokoyama O, Kakizaki H, Gotoh M, et al. Symptom assessment tool for overactive bladder syndrome--overactive bladder symptom score. *Urology*. 2006; 68:318-23.
8. Safarinejad MR. Prevalence of the overactive bladder among Iranian women based on the International Continence Society definition: a population-based study. *Int Urol Nephrol*. 2009; 41:35-45.
9. Stewart WF, Van Rooyen JB, Cundiff GW, Abrams P, Herzog AR, Corey R, et al. Prevalence and burden of overactive bladder in the United States. *World J Urol*. 2003; 20:327-36.
10. Reynolds WS, Fowke J, Dmochowski R. The Burden of Overactive Bladder on US Public Health. *Curr Bladder Dysfunct Rep*. 2016; 11:8-13.
11. Homma Y, Yamaguchi O, Hayashi K. Neurogenic Bladder Society Committee. An epidemiological survey of overactive bladder symptoms in Japan. *BJU Int*. 2005; 96:1314-8.

12. Milsom I, Irwin DE. A cross-sectional, population-based, multinational study of the prevalence of overactive bladder and lower urinary tract symptoms: results from the EPIC Study. *Eur Urol*. 2007; 6:4-9.
 13. Lee Y, Lee K, Jung JH, Han DH, Oh S, Seo JT, et al. Prevalence of overactive bladder, urinary incontinence, and lower urinary tract symptoms: results of Korean EPIC study. *World J Urol*. 2011; 29:185-90.
 14. Chuang Y, Liu S, Lee K, Liao L, Wang J, Yoo TK, et al. Prevalence of overactive bladder in China, Taiwan and South Korea: Results from a cross-sectional, population-based study. *Lower Urin Tract Symp*. 2019; 11:48-55.
 15. Wen JG, Li JS, Wang ZM, Huang CX, Shang XP, Su ZQ, et al. The prevalence and risk factors of OAB in middle-aged and old people in China. *Neurourol Urodyn*. 2014; 33:387-91.
 16. Wang Y, Xu K, Hu H, Zhang X, Wang X, Na Y, et al. Prevalence, risk factors, and impact on health related quality of life of overactive bladder in China. *Neurourol Urodyn*. 2011; 30:1448-55.
-