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The hidden burden of Urinary Incontinence: A Community based study

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Abstract

Urinary Incontinence is one of the common health problems associated with ageing. Although it is not a common cause of mortality, it causes huge discomfort to the suffering person. As there is under-reporting of cases, it is largely a hidden entity in the community. The present study was designed as a community based research aimed at finding out the burden of UI in the ageing female population. The present study was a community based cross-sectional study conducted in the registered field practice areas of Department of Community Medicine, J. N. Medical College and Hospital, Aligarh from June, 2012 to May, 2013. A total of 530 post-menopausal women were approached with pre-tested and pre-structured proforma. The mean age of the study population was 58.14 ± 8.45 years. The observed prevalence of urinary incontinence was study was 41.3%. Stress incontinence was common in younger women, with the maximum prevalence in the age group 46-50 years (7.7%). Urinary incontinence was found to be significantly associated with obstetric factors like increasing parity and vaginal mode of delivery and non-obstetric factors like increasing BMI, central (abdominal) obesity, smoking and standard of living.

Keywords: Urinary Incontinence, post-menopausal women, stress, urge, mixed type

Introduction

Urinary incontinence (UI) is a common clinical condition that affects women of all ages and across different cultures and races all over the world often increasing as a woman ages¹. It is a cause of discomfort, loss of confidence, and negatively affects the quality of life. It has therefore, become a public health problem, with a high economic and human impact². In India, during the last 10 years, there has been a numerical increase in elderly population (aged 45 years and above) and presently around 20.1% of women fall in this age group³. Also, in recent times, the health of elderly women has drawn attention of the researchers and policymakers because there is a global trend of increase in number and life expectancy of this population. Incontinence does not lead to death but it causes substantial debility, social seclusion, psychologic stress, and adds up to the economic burden of the country. The physiopathology of urinary incontinence is related to compromise of the levator ani muscles, endopelvic fascia, and muscular urethra following pudendal nerve denervation and loss of ligamentous support of the urethral complex⁴. Suboptimal urethral compression pressure of the levator ani muscles to facilitate sphincter closure has been correlated with obesity, hyperglycemia, paravaginal defects, micro-vascular innervations impairments, neurological defects, chronic bacterial colonization, urinary retention, and urinary tract infections⁵.

Objectives:

- 1) To determine the prevalence of urinary incontinence among post-menopausal women.
- 2) To describe the various socio-demographic factors associated with it.

Materials and Methods

It was community based cross sectional study and the sampling frame included all the households registered under UHTC and RHTC, Department of Community Medicine, JNMCH, Aligarh. All postmenopausal women who are residents of the study areas were included as study subjects. The study period was one year i.e. from June, 2012 to May, 2013. All women who did not give consent, who had not attained menopause, who were receiving hormone replacement therapy or were unmarried were excluded from the study. Systematic random sampling and proportionate to population size method (PPS) was used for selecting the study subjects. This study

was actually a part of a larger study on postmenopausal women and therefore the sample was calculated according to a study by Puri et al⁶, who reported 42.7% had vaginal irritation/discharge in the urban and slum areas of Chandigarh. Applying Non-Response of 10 %, sample was found out to be 265. Taking similar sample size in both rural and urban areas, sample size was taken as 530. The distribution of the sample according to the area is shown in table 1.

Study tools: Proforma, measuring tape, weighing machine, Automatic Blood pressure monitor.

The definitions and criteria used for assessment of urinary incontinence were as follows:

Definition of Urinary Incontinence (UI)

The International Continence Society defined UI as "the complaint of any involuntary leakage of urine".

Type of UI was assessed by the following questions (Yarnell et al)⁷.

- Urge incontinence was recorded as a positive response to the questions "Do you ever have to rush to the toilet to pass urine" and "If you have to rush to the toilet do you ever lose any urine before reaching the toilet"?
- Stress incontinence was defined as a positive response to the question "Do you lose urine at any other time; for example, when you cough, laugh, or sneeze, etc."?
- Mixed incontinence was defined as any combination of the urge and stress types.
- Each of the three types, as presented in the results, is mutually exclusive of the others.

Severity of UI was assessed by: Urinary incontinence severity indicator as shown by table 2.

Clinical examination included general examination, weight, height and Blood Pressure measurement.

Data analysis: Data was analyzed using the SPSS version 20.0. The value of $p < 0.05$ was considered as significant.

Results and Discussion

The mean age of the study population was 58.14 years (± 8.45 S.D.). Median age was 57.0 years and mode was 50.0 years.

The mean age at menopause was 46.54 years (± 2.80 S.D.). Median age at menopause was 46.0 years and Mode was 45.0 years.

Socio-demographic profile of study subjects:

Maximum number of respondents (29.6%) belonged to 56-60 years age group. In the rural areas 70.7% of the study subjects were married, 1.9% were single, and 27.5% were widowed; in the urban areas, 56.6% of the study subjects were married, 4.9% were single and 38.5% were widowed. Majority of the study subjects both in the rural and urban areas were illiterate. When compared on the basis of type of family, in the rural areas 27.5% of the study subjects were having a nuclear family, 73.2% were living in a joint family, and 1.1% were living alone; in the urban areas, the figures were 31.7%, 60.8% and 7.5% respectively. Majority of the women in both rural and urban areas were unemployed/retired or homemakers. Most of the women in both the rural and urban areas were dependent on their children. 20.0% in rural and 13.2% women in urban areas were financially self-dependent. Overcrowding was found more in rural areas (66.4%) compared to urban areas (51.7%). SLI was low for most of the women in rural women whereas it was medium for most of those living in urban areas.

Prevalence of Urinary Incontinence:

The observed prevalence of urinary incontinence in this study was 41.3% (Table-3). On binary logistic regression analysis, it was found that the Odds ratio for presence of U.I. in the age group 46-50 was 2.22 (95% CI 0.633-7.797), in the age group 51-55 was 1.21 (95% C.I. 0.341-4.310), in the age group 56-60 was 0.90 (95% C.I. 0.261-3.157) and in the age group >60 years was 1.72 (95% C.I. 0.498-5.977) as compared to the age group 41-50 but was found to be statistically insignificant.

Prevalence rates of UI in women vary widely because of differences in definitions, study characteristics, and target populations⁸. The prevalence of urinary incontinence, especially in elderly women, is estimated to be in the range of 35–45%, although estimates vary greatly. Urinary incontinence is the eighth most prevalent chronic medical condition among women in the United States⁹. Stewart (2003) reported in their study that elderly women are the most affected, with a mean prevalence of 34%; in elderly men, on the other hand, mean prevalence is 22%¹⁰.

Botlero et al reported overall prevalence of any UI as 41.7% (95% CI: 37.2–45.8%)¹¹. Danforth et al conducted a study on females between the ages 37 to 54 years and reported incontinence in 43.0% of the women and maximum prevalence in the age group >60 years¹². The median prevalence of UI was 27.6% (range: 4.8–58.4%) in females in the survey conducted by Minassian et

al and the prevalence of significant incontinence increased with age. Common types of UI reported by him were stress (50%), then mixed (32%) and finally urge (14%)¹.

Severity of UI:

Further, in the present study, it was observed that (Figure 1) among the total patients, mild cases (24.0%) were most common, followed by moderate (11.3%), severe (4.7%) and very severe (1.3%). It was seen that maximum patients (26.2%) of U.I. had mild type of incontinence out of which maximum (7.7%) belonged to the age group of >60 years followed by 45-50 (6.8%), 56-60 (5.5%), 51-55 (3.4%), 41-45 (0.6%) years. So it was observed that severity of UI increases over the age groups though the difference found is insignificant. The exception was the age group 45-50 years and it can be explained on the basis of the fact that most of these cases were also having prolapse of the uterus found during clinical examination. As the study took place in the community and not in the hospital settings where it is more likely to see cases of severe incontinence, the maximum prevalence of mild cases seems justified. Melville et al¹³ reported that among all respondents, 9% reported slight UI, 15% reported moderate UI, 18% reported severe UI, and 58% reported no UI.

Risk Factors

Urinary incontinence was found to be significantly associated with obstetric factors like increasing parity and vaginal mode of delivery and non-obstetric factors like increasing BMI, central (abdominal) obesity, smoking and standard of living.

1. Parity

The present study shows that out of the total women having <3, 3-5 and >5 children, UI was present in 51.0%, 51.2% and 34.4% respectively. This statistically significant difference can be attributed to the fact that most women in the study population had >5 children (311 out of 530) out of whom 34.4% were found to be having UI. However, out of the total UI cases the number of subjects having more than five children were 107 i.e. 48.86% (maximum). Similar results were found by a cross-sectional study conducted by Sherburn et al¹⁴ reported that urinary incontinence patients were significantly more likely than those without incontinence to have had three or more children. The prevalence of urinary incontinence was investigated by Thomas et al after determining the number of incontinent patients under the care of various health and social service agencies in two London boroughs was 0.2% in women and 0.1% in men aged 15-64 and 2.5% in women and 1.3% in men aged 65 and over. The prevalence was appreciably increased in women who had had four or more children¹⁵.

2. Mode of Delivery

UI was present in 41% of the women who had had all deliveries by vaginal route. A comparative cross-sectional study by Guarisi et al was performed among 30 women with urinary incontinence in 2002 and his study demonstrated that climacteric women who delivered only by the vaginal route had a significantly higher risk of uro-dynamic abnormalities².

3. Central (Abdominal) Obesity

41.3% of patients having UI were obese. This association was found to be significant similar to study by Botlero et al who reported that being overweight ($p = 0.035$) or obese ($p < 0.001$) increases the risk of UI¹¹.

4. BMI

It was observed that when compared to the study subjects having normal BMI, subjects having class 1 obesity had 2.349 times risk of UI and UI was present in 57.9% of all cases of class 1 obesity; 33.3% of all cases of class 2 obesity and all the 7 subjects who were classified as obese class 3 were found to be having UI. It was observed that UI was significantly associated with obesity and this is seen more so in the urban areas. This may be because of increased prevalence of obesity in urban areas owing to sedentary lifestyle of people. Similar findings were reported by Gold et al who found out that urine leakage was associated with a high body mass index¹⁶. Tsai et al reported that increased body mass index (BMI) is associated with increased intra-abdominal pressure, thereby straining pelvic floor structures and increasing bladder pressure and urethral mobility¹⁷.

5. Chronic Diseases

The present study shows that out of the 161 patients having chronic diseases, 48.4% were found to be having UI. DM and HTN, or chronic respiratory or cardiac illnesses were at 1.5 odds of having UI.

6. Addiction

UI was present in 54% of cases who were smokers. This relation was found to be significant and they were at 1.923 odds for getting UI. On comparing with the number of pack-years, 58.8% of the subjects having 10-20 pack-years of smoking were found to be having UI with the odds of 2.342 (CI 1.390-3.946) compared to the non-smokers. No significant relation was found between tobacco-chewing and UI.

7. Standard of Living (SLI)

Highest prevalence of UI was found in those living with medium SLI. This can be attributed to the fact that maximum number of subjects i.e. 44.9% belonged to medium SLI group with 46% subjects of rural areas belonging to low SLI group and 55.8% subjects of urban areas belonging to medium SLI group.

Danforth et al carried out a study to identify risk factors for urinary incontinence in middle-aged women through mailed questionnaires. 43% of the women reported incontinence. They reported that increasing age, body mass index, parity, current smoking and type 2 diabetes mellitus were associated positively with incontinence¹².

Conclusions

Urinary incontinence is a common clinical condition that affects the ageing women. It was observed that the prevalence of urge and mixed incontinence increased with increasing age groups. Stress incontinence was common in younger women, with the maximum prevalence in the age group 46-50 years (7.7%). Urinary incontinence was found to be significantly associated with obstetric factors like increasing parity and vaginal mode of delivery and non-obstetric factors like increasing BMI, central (abdominal) obesity, smoking and standard of living. These factors are modifiable and therefore can be prevented to save the affected women from the associated debility and stress. The reasons for the continued suffering in silence may be cultural and reluctance to discuss such matters, particularly with a male doctor. The medical profession must take up the responsibility to enquire of all ageing women these problems they hesitate to share.

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Tables and Figures:

Table-1. Distribution of study subjects according to the area

Name of area	Registered households	Sample size	Sampling interval
R.H.T.C.			
Jawan	926	105	9
Sumera	594	67	9
Tejpur	267	28	9
Chota jawan	266	29	9
G.bhojpur	185	17	10
Jawan sikandarpur	137	14	10
Sumera jhal	47	5	10
Total in R.H.T.C.	2422	265	
U.H.T.C.			
Firdous nagar	764	118	6
Nagla quila	578	85	6
Shahanshabbad	286	44	7
Patwari ka nagla	125	18	7
Total in U.H.T.C.	1753	265	
Total sample size=530			

Table - 2. Urinary incontinence severity indicator (Sandvik et al)¹⁸

Frequency of UI	Once or less per month	Few times per month	Few times per week	Every day
A	1	2	3	4
Amount of UI	Few drops	Small splashes	More	
B	1	2	3	
Severity index	Mild	Moderate	Severe	Very severe
C =A×B	1-2	3-6	8-9	12

Table - 3. Prevalence of urinary incontinence (UI)

Age (years)	Rural		Urban		Total		On univariate logistic regression		
	UI		UI		UI		OR	95% CI	
	Absent N (%)	Present N (%)	Absent N (%)	Present N (%)	Absent N (%)	Present N (%)		Lower	Upper
41-45	7 (77.8)	2 (22.2)	1 (33.3)	2 (66.7)	8 (66.7)	4 (33.3)	1.00		
46-50	25 (67.6)	12 (32.4)	29 (37.7)	48 (62.3)	54 (47.4)	60 (52.6)	2.22	0.633	7.797
51-55	40 (80.0)	10 (20.0)	21 (43.8)	27 (56.3)	61 (62.2)	37 (37.8)	1.21	0.341	4.310
56-60	91 (92.9)	7 (7.1)	17 (28.8)	42 (71.2)	108 (68.8)	49 (31.2)	0.90	0.261	3.157
>60	53 (74.6)	18 (25.4)	27 (34.6)	51 (65.4)	80 (53.7)	69 (46.3)	1.72	0.498	5.977
Total	216 (81.5)	49 (18.5)	95 (35.8)	170 (64.2)	311 (58.7)	219 (41.3)			
	□2=15.522, d.f.=4, p=0.004		□2=2.743, d.f.=4, p=0.602		□2=14.993, d.f.=4, p=0.005				

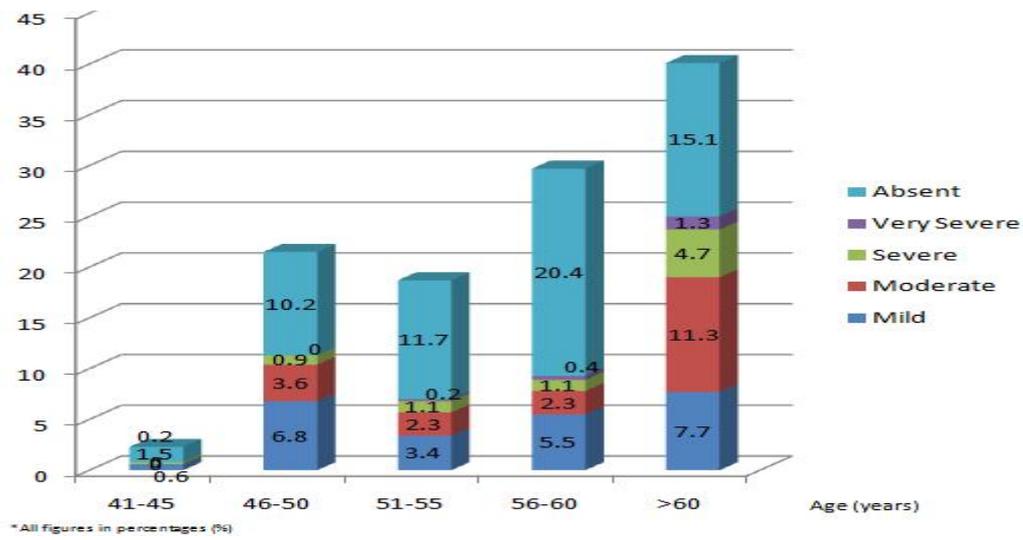


Figure-1. Distribution of severity of UI with age groups