



URINARY INCONTINENCE: PREVALENCE AND RISK FACTORS

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ABSTRACT

Background: Urinary incontinence (UI) is underreported and underdiagnosed condition with widespread human and social and economic implications. **Aims & Objects:** To evaluate prevalence and epidemiological factors of UI in women. **Methodology:** 500 non-pregnant women more than 20 years attending gynae OPD were enrolled. Their demographic profile, gynaecological complaints, obstetric and menstrual history, history of urinary incontinence, chronic illness, UTI, surgical history were recorded. Incontinent women were evaluated for residual urine by USG. **Results:** Overall prevalence of UI was 12%. Stress and urge incontinence was prevalent in 8.6% and 3.4% respectively in these women. UI was found to be prevalent in 2.7% in women who came for other gynaecological reasons and not UI. Age, socio-economic status, menopause, pelvic organ prolapse, history of diabetes mellitus and hypertension were significantly associated (p value <0.01) with women having UI. **Conclusions:** Prevalence of UI was 12%. Stress and urge incontinence contributed to 8.6% and 3.4% cases respectively. The risk factors for UI were age, socio-economic status, menopause, pelvic prolapse, known cases of diabetes mellitus and hypertension. Parity and mode of delivery were not found to be associated with UI.

INTRODUCTION

Urinary incontinence (UI) is a common problem with widespread human, social and economic implications causing discomfort, low self esteem, and loss of self-confidence. It not only affects quality of life but also has significant cost implications.

Urinary incontinence is defined by the International Continence Society as any involuntary leakage of urine.^[1] It can affect women's physical, psychological, and social well-being and sometimes can impose significant lifestyle restrictions.

The main types of urinary incontinence are stress and urgency UI. Many women have features of more than one type. Urogenital fistulas, and ectopic ureters, spinal cord disorders are uncommon causes for UI. Spinal cord disorders and other neurologic disorders ie. stroke, Parkinson disease, and normal pressure hydrocephalus can lead to UI. Overflow incontinence and poor urinary stream can be present in patients with diabetic autonomic neuropathy.

Incontinence is both underreported and underdiagnosed. The prevalence of incontinence may be significantly underestimated since doctor rarely asks patient about the problem and the patient seldom initiate discussion about incontinence with the doctor. Fewer than half of the persons with urinary incontinence living in the

community consult health care providers about their problem.^[2]

Estimates of the prevalence of urinary incontinence vary depending on the population studied, and the operational definition used. Various studies have reported various prevalence rate from 12% - 21.8% Singh U et al.^[3]

Urinary incontinence mainly affects women, of different age groups, but with a higher prevalence in elderly women and postmenopausal women. Approximately 25% of young women, 44–57% of middle-aged and postmenopausal women, and 75% of older women experience some involuntary urine loss.^[4]

Urinary incontinence can be slightly bothersome or totally debilitating. Women experience it twice as often as men. Pregnancy, childbirth, menopause account for this difference. The risk factors include: age, parity, obesity, and menopause.^[5]

The present study is aimed to determine the prevalence and epidemiological risk factors for urinary incontinence amongst women coming to gynecological outpatient department, risk factors and type of incontinence.

AIMS AND OBJECTS

To determine the prevalence and epidemiological risk factors for urinary incontinence in women coming to

outpatient department with complaints of UI or other gynaecological complaints.

METHODOLOGY

This is a prospective observational study conducted on 500 consecutive women over 20 years of age attending gynecology OPD in Department of Obstetrics and Gynecology NDMC Medical College and associated Hindu Rao Hospital from Dec 2016 - May 2018 fulfilling eligibility criteria after taking informed consent.

Inclusion Criteria-Married women of age 20 years and above, women who gave informed consent for the study

Exclusion Criteria-Pregnant women, women below 20 years of age, unmarried women, women who did not give consent for the study, women with vesico-vaginal fistula, neurogenic bladder, functional bladder.

Five hundred women were enrolled after exclusion and inclusion criteria. Study was approved by ethical

committee of institute. Their demographic profile (age, parity, socioeconomic status and BMI), gynaecological complaints, obstetric and menstrual history were recorded. Urinary incontinence complaints if any, symptoms related to urinary tract infection, stress and urge incontinence were inquired from all the women. History of UTI, chronic illnesses including diabetes mellitus, hypertension, and neurological disorders was asked. Surgical history included caesarean deliveries, hysterectomy and incontinence surgery was recorded on a predesigned proforma. Stress incontinence was confirmed by local examination. Women with stress/urge incontinence were evaluated for residual urine by USG.

Stress incontinence was defined as involuntary leakage of urine due to raised intra-abdominal pressure like coughing, sneezing, laughing, exercise or lifting heavy object^[6] Urge incontinence was defined as involuntary loss of urine occurring for no apparent reason while suddenly feeling the need or urge to urinate and was associated with urgency, frequency and nocturia.^[6]

RESULTS

Table showing study data.

S. No.	Parameter	Women without incontinence n=440 (100%)	Women with stress incontinence n=43 (100%)	Women with urge incontinence n=17 (100%)	P value
1.	Age years 20-40	331 (75.23%)	19 (44.19%)	6 (35.29%)	< 0.01
	41-60	94 (21.36%)	21 (48.84%)	8 (47.05%)	
	>60	15 (3.41%)	3 (6.98%)	3 (17.64%)	
	Mean age years	35.04 ± 8.33	45.98 ± 9.30	48.77 ± 10.08	<0.01
2.	Socioeconomic status (BG Prasad) II	76 (17.27%)	12 (27.90%)	2 (11.76%)	<0.01
	III	290 (65.90%)	14 (32.56%)	9 (52.94%)	
	IV	38 (8.63%)	15 (34.88%)	6 (35.29%)	
	V	36 (8.18%)	2 (4.65%)	0 (0%)	
3.	BMI <25kg/m ³	350 (79.54%)	23 (53.49%)	14 (82.35%)	<0.01
	>25kg/m ³	90 (20.45%)	20 (46.51%)	3 (17.64%)	
4.	Parity- Nullipara	21 (4.77%)	3 (6.98%)	0 (0%)	0.149
	Para 1	37 (8.40%)	0 (0%)	0 (0%)	
	Multipara	382 (86.81%)	40 (93.02%)	17 (100%)	
5.	Menopause attained	47 (10.68%)	8 (18.60%)	5 (29.41%)	< 0.01
6.	Delivery mode- Normal	415 (94.32%)	43 (93.02%)	17 (100%)	0.46 0.187
	Instrumental	11 (2.50%)	0 (0%)	0 (0%)	
	LSCS	14 (3.18%)	0 (0%)	0 (0%)	
7.	UTI symptoms	94 (21.36%)	21 (48.84%)	8 (47.05%)	< 0.01
8.	History of DM	3 (0.68%)	0 (0%)	8 (47.05%)	< 0.01
9.	History of HT	3 (0.68%)	2 (4.65%)	3 (17.64%)	< 0.01
10.	Pelvic prolapse present	19 (4.31%)	12 (27.90%)	5 (29.41%)	< 0.01
11.	Postvoid residual urine (mean ml ³)	34.86 ± 5.64	37.56 ± 6.76	45.59 ± 12.73	

DISCUSSION

The overall prevalence of UI was 12% in our study. The prevalence of stress incontinence was 8.6% while that of urge incontinence was 3.4% among the overall study women (n=500). Among incontinent women 71.6% (n=43) had stress UI and 28.3% (n=17) had urge UI. In women who did not complaint of UI and came for other gynaecological complaints the incidence of UI was found

to be 2.7% when inquired regarding UI symptoms in detail. These women did not come forward to reveal their problem regarding UI.

Bodhare.N et al observed a prevalence of UI as 10%, 57% women had stress UI, 23% had urge UI and 20% had mixed type UI.^[7] Our study findings were consistent with reports of Kumari et al (12%) Sumardi et al. (13%)

and Abiola et al (12.6%).^[8,9,10] Compared to our study Singh U et al in a study of 3000 women, observed a higher frequency of incontinence as 21.87%^[3], highest numbers were found to have stress incontinence (73.8%) followed by mixed (16.8%) and urge incontinence (9.5%). A higher prevalence of UI have been reported in some studies from 22% to 37%.^[11,12,13,14,15] This variance in the prevalence may be due to different study population, settings and sample size used.

In our study, the prevalence of incontinence was observed to be significantly higher ($p < 0.01$) in women above 60 years of age (28.6%) as compared to below 40 years of age (7%). The mean age of women with stress and urge UI was 45.98 years & 48.77 years respectively which was also statistically significant ($p < 0.01$). Hence, the prevalence of urinary incontinence has been observed to increase with age. This might be due to loss of muscle tone with age and change in hormonal status.

Singh U et al in their study observed that in women above 30 years of age, the prevalence ranged from 27.8% to 42.8% with maximum prevalence in the age group of 61–70 years of age.^[3] All types of urinary incontinence were found to be significantly higher among women above 40 years of age ($P < 0.001$).^[3] Similar study was done by Geeta G et al and they found 51.81% were having stress UI in age group of 40 to 60 years and 83.33% women had stress UI at more than 60 year age.^[16]

A significant association was observed in our study between socio-economic status (SES) and urinary incontinence. The prevalence being more in lower socio-economic classes (III/ IV) than classes I and II. Bodhare N et al found no significant association between socio-economic index of respondents and the outcome of UI.^[7]

Singh A et al found UI amongst menopausal women as 20.74%.^[17] This was similar to the present study.

High BMI was found to be significantly associated with urinary incontinence in our study (p value 0.01). Prevalence of UI being significantly higher in case with BMI > 25 kg/m² (20.3%) as compared to women with BMI below 25 kg/m² (9.5%). Obesity is one of the major factor for incontinence.^[13] In a study done by Singh U et al the prevalence was reported as 20.77% and 26.25% with BMI < 25 and >25 kg/m² respectively.^[3] The odds of incident urinary incontinence during 5 to 10 years increased by approximately 30% to 60% for each 5-unit increase in body mass index.^[18] However, Bodhare N et al. found no significant association between BMI and UI.^[7] Studies have shown greater chance of remission for stress incontinence than urgency incontinence on losing weight.^[19] With increasing body weight, there is rise in intra-abdominal pressure and urethral mobility. This causes detrusor instability and stress incontinence.^[20] We observed a higher prevalence of incontinence in multi-parous (12.9%) women though, the difference was

statistically non-significant. None of the nulliparous and primiparous women complaint of incontinence. Singh U et al observed that incontinence was found to be positively associated with increasing parity.^[3] Differentially stress incontinence showed an increasing trend with increasing parity. However, in women with urge incontinence, the prevalence was high only in grand multiparous women, while it was similar in nulliparous and women of low parity ($p=0.244$ and 1.35).^[3] Similar study was done by Bodhare N et al, 64 % of incontinent women had more than 2 children.^[7] Kilic M et al in their study revealed a significant correlation between parity and incontinence.^[21]

We did not observe any association of UI in women who had undergone caesarean section (p value 0.187). A prevalence of 7.1% and 13% was seen in women with and without caesarean section respectively. Also, no association was observed between history of instrumental deliveries and urinary incontinence ($p=0.46$). There were only 11 instrumental deliveries in our study and none of them had UI.

Bodhare N et al had found higher proportion of UI among women who had undergone caesarean section.^[7] This may be explained by fact that in their study there were more emergency caesarean section and it may not be protective for UI. Boyles et al has done population-based study of over 15,000 primiparous women surveyed within one year postpartum and found no significant difference in the incidence of UI in those who had elective cesarean deliveries (6.1%), women who had cesarean deliveries after laboring (5.7%), and women who had cesarean deliveries after laboring and pushing (6.4%).^[22] Parazzini studied that number of vaginal birth was associated with risk of stress and mixed UI, but not urge incontinence and overactive bladder.^[23]

Forceps delivery, perineal laceration, birth weight and episiotomy were associated with pelvic floor dysfunction.^[24] Forceps delivery appears to be associated with injury to the levator ani muscles and has been associated with pudendal neuropathy.^[25] Thus, operative vaginal delivery with forceps appears to increase the risk of developing pelvic organ prolapse, thereby increasing chance of incontinence.^[26] Johanson et al has reported that operative vaginal delivery does not appear to have significant impact on risk of UI^[27] similar to our study. A significant higher prevalence of UI was observed in women with urinary tract infection (UTI) symptoms or history of UTI (23.6%) as compared to those without (7%). Studies have shown significant association between urinary incontinence and recurrent urinary tract infections.^[15] UTI can present with symptoms of overactive bladder that exacerbate urinary incontinence symptoms. Not all women with a UTI will experience pain or hematuria.^[28] Moore E et al studied that basal rate of urine loss was higher in women who were experiencing UTI as compared to those who did not have UTI. Women with UTI may have more incontinence not

only during the episode but also immediately following the UTI.^[29]

We observed a significant association between associated comorbidities and urinary incontinence. The prevalence was 62.5% in women with associated diabetes mellitus (DM) or hypertension (HT) as compared to 10.3% in women without any co-morbidity.^[3] Similar observations have been made by Singh U et al.^[3] Kilic et al observed that 21.9% of females with incontinence had diabetes.^[15]

DM has a remarkable role on UI, because of glycosuria, overactivity of the detrusor muscle, recurrent urinary infections, and diabetic cystopathy.^[30] Brown JS et al stated that hyperglycemia might cause incontinence if it increases urine volume and damages the nerve conduction of the bladder.^[31]

In the present study, prevalence of UI was 47.2% and 9.3% in women with pelvic organ prolapse and without prolapse respectively. Genital prolapse and UI might be seen concomitantly in the same patient.^[32] Kilic M et al. in their study found that pelvic organ prolapse was observed in 15.3% in women with incontinence.^[15] Damage to the nerves and muscles in the pelvic floor probably is the main causative factor leading to development of the pelvic organ prolapse.

In our study, mean post void residual volume was found to be lower in women without incontinence (34.86 ml³) and in women with stress UI (37.56 ml³) as compared to women with urge UI (45.59ml³). Huang et al found that elevated PVR was not associated with increased risk of stress UI, nocturnal frequency or UTI.^[33]

CONCLUSION

The overall incidence of UI was 12% in our population. Out of these 8.6% had stress incontinence and 3.4% women had urge incontinence. The risk factors for UI were age, socio-economic status, menopause, pelvic prolapse, co-morbidities ie. diabetes mellitus and hypertension. Parity and mode of delivery were not found to be associated with UI.

CONFLICT OF INTEREST: The authors have no conflict of interest.

REFERENCES

1. Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: report from the Standardisation Subcommittee of the International Continence Society. *Neurourol Urodyn*, 2002; 21(2): 167-178.
2. Burgio KL, Ives DG, Locher JL, et al. Treatment seeking for urinary incontinence in adults. *J Am Geriatr Soc.*, 1994; 42: 208-212.
3. Singh U, Agarwal P, Verma ML, Dalela D, Singh N, Shankhwar P. Prevalence and risk factors of urinary incontinence in Indian women: A hospital-based survey. *Indian J Urol.*, Jan, 2013; 29(1): 31-6.
4. Shamliyan T, Wyman J, Kane RL. Nonsurgical Treatments for Urinary Incontinence in Adult Women: Diagnosis and Comparative Effectiveness. Rockville (MD): Agency for Healthcare Research and Quality (US); Apr, 2012. Report No.: 11(12): EHC074-EF.
5. Danforth KN, Townsend MK, Lifford K, Curhan GC, Resnick NM, Grodstein F. Risk factors for urinary incontinence among middle-aged women. *Am J Obstet Gynecol*, Feb, 2006; 194(2): 339-45.
6. Haylen BT, Ridder D de, Freeman RM, Swift SE, Berghmans B, Lee J et al. An International Urogynecological Association (IUGA)/ International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Neurourol Urodyn*, 2010; 29: 4-20.
7. Bodhare NT, Valsangkar S, Bele DS. An epidemiological study of urinary incontinence and its impact on quality of life among women aged 35 years and above in a rural area Indian J Urol, Nov, 2010; 26(3): 353-8.
8. Kumari S(1), Singh AJ, Jain V. Treatment seeking behavior for urinary incontinence among north Indian women. *Indian J Med Sci.*, Sep, 2008; 62(9): 352-6.
9. Sumardi R, Mochtar CA, Junizaf, Santoso BI, Setiati S, Nuhonni SA, et al. Prevalence of urinary incontinence, risk factors and its impact: Multivariate analysis from indonesian nationwide survey. *Acta Med Indones*, 2014; 46: 175-82.
10. Abiola OO, Idowu A, Ogunlaja OA, Williams-Abiola OT, Ayeni SC. Prevalence, quality of life assessment of urinary incontinence using a validated tool (ICIQ-UI SF) and bothersomeness of symptoms among rural community: Dwelling women in Southwest. *Nigeria*, 2016; 3: 989-97.
11. Biswas B, Bhattacharyya A, Dasgupta A, Karmakar A, Mallick N, Sembiah S. Urinary incontinence, its risk factors, and quality of life: A study among women aged 50 years and above in a rural health facility of West Bengal. *J Mid-life Health*, 2017; 8: 130-6.
12. Ansar H, Adil F, Munir AA. Unreported urinary and anal incontinence in women. *J Liaquat Univ Med Health Sci.*, 2005; 4: 54-6.
13. Prabhu SA, Shanbhag SS. Prevalence and risk factors of urinary incontinence in women residing in a tribal area in Maharashtra, India. *J Res Health Sci.*, 2013; 13: 125-30.
14. Seshan V, Muliira JK. Self-reported urinary incontinence and factors associated with symptom severity in community dwelling adult women: Implications for women's health promotion. *BMC Womens Health*, 2013; 13: 16.
15. Kılıç M. Incidence and risk factors of urinary incontinence in women visiting family health centers. *Springerplus*, 2016; 5: 1331.

16. Geeta G, Choudhary A, Dadhich R. Prevalence of stress urinary incontinence and its associated risk factors amongst females attending tertiary referral centre. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. May 26, 2018; 7(6): 2115-9.
17. Singh A, Priti A, Nanakram S. Incidence and epidemiology of urinary incontinence in women. *J Obstet Gynaecol India*, Mar, 2007; 57(2): 155-7.
18. Subak LL, Wing R, West DS, et al. Weight loss to treat urinary incontinence in overweight and obese women. *N Engl J Med*, 2009; 360: 481.
19. Wing RR, West DS, Grady D, et al. Effect of weight loss on urinary incontinence in overweight and obese women: results at 12 and 18 months. *J Urol*, 2010; 184(3): 1005–1010.
20. Bump R, Sugerman H, Fantl J, et al. Obesity and lower urinary tract function in women: effect of surgically induced weight loss. *Am J Obstet Gynecol*, 1992; 166: 392.
21. Kılıç M. Incidence and risk factors of urinary incontinence in women visiting family health centers. *Springerplus*, 2016; 5: 1331.
22. Boyles SH, Li H, Mori T, et al. Effect of mode of delivery on the incidence of urinary incontinence in primiparous women. *Obstet Gynecol*, 2009; 113: 134.
23. Parazzini F, Chiaffarino F, Lavezzari M, Giambanco V. Risk factors for stress, urge or mixed urinary incontinence in Italy. *BJOG*, 2003; 110: 927–33.
24. Boyles SH, Li H, Mori T, et al. Effect of mode of delivery on the incidence of urinary incontinence in primiparous women. *Obstet Gynecol*, 2009; 113: 134.
25. Krofta L, Otcenášek M, Kasíková E, Feyereisl J. Pubococcygeus-puborectalis trauma after forceps delivery: evaluation of the levator ani muscle with 3D/4D ultrasound. *Int Urogynecol J Pelvic Floor Dysfunct*, 2009; 20: 1175.
26. Volløysaug I, Mørkved S, Salvesen Ø, Salvesen KÅ. Forceps delivery is associated with increased risk of pelvic organ prolapse and muscle trauma: a cross-sectional study 16-24 years after first delivery. *Ultrasound Obstet Gynecol*, 2015; 46: 487.
27. Johanson RB, Heycock E, Carter J, Sultan AH, Walklate K, Jones PW. Maternal and child health after assisted vaginal delivery: five-year follow up of a randomised controlled study comparing forceps and ventouse. *BJOG: An International Journal of Obstetrics & Gynaecology*, Jun, 1999; 106(6): 544-9.
28. Mody L, and Juthani-Mehta M, Urinary Tract Infections in Older Women A Clinical Review. *JAMA*, Feb 26, 2014; 311(8): 844–854. doi: 10.1001/jama.2014.303
29. Moore EE, Jackson SL, Boyko EJ, et al. Urinary incontinence and urinary tract infection: temporal relationships in postmenopausal women. *Obstet Gynecol*, 2008; 111: 317.
30. Karoli R, Bhat S, Fatima J, and Priya S. A study of bladder dysfunction in women with type 2 diabetes mellitus. *Indian J Endocrinol Metab*, Jul-Aug, 2014; 18(4): 552–557. doi: 10.4103/2230-8210.137518.
31. Brown JS, Seeley DG, Fong J, Black DM, Ensrud KE, Grady D, Group S Urinary incontinence in older women: who is at risk? *Obstet Gynecol*, 1996; 87(5): 715–721.
32. Meschia M, Buonaguidi A, Pifarotti P, Somigliana E, Spennacchio M, Amicarelli F. Prevalence of anal incontinence in women with symptoms of urinary incontinence and genital prolapse. *Obstet Gynecol*, 2002; 100(4): 719–723.
33. Huang AJ, Brown JS, Boyko EJ, et al. Clinical Significance of Postvoid Residual Volume in Older Ambulatory Women. *Journal of the American Geriatrics Society*, 2011; 59(8): 1532-8.