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Original Research Article

Prevalence of stress urinary incontinence and its associated risk factors amongst females attending tertiary referral centre

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ABSTRACT

Background: Urinary incontinence (UI) is one of the most common diseases in the world, occurring majorly in females. The most common reason of its occurrence in women is: stress urinary incontinence. The frequent and repeated small leaks lead to soreness and excoriation of the vulva, and necessitate frequent changes of underclothing or the constant wearing of the protective clothing. In severe cases the woman's life becomes a misery; she feels a social outcast and avoids leaving the house.

Methods: This study was conducted at Netaji Subhash Chandra Bose medical college and hospital from October 2016 to October 2017. A total of 418 women above 18 years of age who have none of the exclusion criteria (active UTI, pregnancy and 6 weeks postpartum, malignancy, any neurological illness, all patients with true illness) were included. Data was collected using a predesigned proforma meeting the objectives of the study with their consent.

Results: We have studied 418 cases out of which 77 (18.4%) cases were found to have stress urinary incontinence.

Conclusions: Stress urinary incontinence amongst women is an undiagnosed problem leading to significant suffering. This study signifies how neglected women's health, post menopause particularly genitourinary health is. It also highlights the simple clinical diagnostic parameters needed to establish the presence of incontinence.

Keywords: Prevalence, Parity, Stress urinary incontinence, Urinary incontinence

INTRODUCTION

Urinary incontinence affects 23% to 55% of women.¹⁻³ The most common types are stress urinary incontinence (SUI), urge urinary incontinence (UUI), and mixed urinary incontinence (MUI).⁴

The most common reason of its occurrence in women is: stress urinary incontinence, i.e. exerting pressure on the abdominal region, sneezing, coughing, laughing or doing sports; in cases of overactive bladder, with urge-incontinence, it occurs with a strong, uncontrollable urge to urinate, with a high chance of losing urine if a restroom is not found; and mixed incontinence, when

there is loss of urine associated to both situations, i.e. it is preceded by efforts and symptoms of urgency.

This is an underrated problem since the symptoms are disregarded due to lack of knowledge or shame, the fact suggests that this is a "hidden" problem, underestimated both by the carrier and by other healthcare professionals.

This condition is more common in women than in men. Urinary incontinence can significantly impair quality of life, restricting social activity in women and usually accompanied by medical complication.

SUI is thought to be caused by a sphincteric abnormality, which in the past was considered to be either urethral

hypermobility or intrinsic sphincteric deficiency (ISD). SUI is now thought to be due to an abnormality in the urethra itself rather than abnormalities in the vaginal position or mobility.⁵ On magnetic resonance imaging(MRI) of the pelvic floor, SUI was associated with unequal movement of the anterior and posterior walls of the bladder neck and urethra in the presence of increased abdominal pressure. MRI demonstrated the urethral lumen being pulled open as the posterior wall moved away from the anterior wall.^{6,7} Anatomic specimens have demonstrated that the urethra is compressed against a hammock-like musculofascial layer upon which the bladder and bladder neck rest. If this supporting layer becomes unstable, significant changes in abdominal pressure can cause SUI.^{8,9}

Continence in women is usually affected by the pelvic floor muscles that basically help to hold and, when required, help to release urine from the urinary bladder. The body stores urine in the bladder, that expands as the bladder fills with urine. The bladder wall muscles contract in response to stimuli, forcing urine out into the urethra. The sphincter muscles surrounding the urethra relax and let the urine pass out of the body. This is the normal process of urination.

Urine leakage occurs when the pressure in the bladder, the Expulsive force is greater than the pressure within the urethra, the Closure force. At this point women loses urine involuntarily. Incontinence also occurs if the bladder muscles suddenly contract, the urethral muscles suddenly relax, or if there is a malfunction of the urethral sphincter. When there is a weakness in the pelvic floor muscles that support the bladder and other pelvic organs, these organs could prolapse and cause additional pressure on the bladder, leading to leakage of urine.

Stress urinary incontinence

According to the international continence society, stress urinary incontinence is defined as the involuntary leakage of urine with exertion such as coughing, sneezing and laughing.

Stress incontinence means the escape of urine through the urethra when the intra abdominal (and therefore intravesical) pressure is raised by a sudden movement, coughing, sneezing, laughing, walking or, in certain cases, even turning in bed. In extreme cases, it requires a rise in bladder pressure to only 20 or 30 cm of water to cause a leak, in the mildest, the pressure may have to be raised to 70 or 80 cm of water. The amount of urine lost at any one time is usually only a few drops, and this is a feature important in the diagnosis.

The frequent and repeated small leaks lead to soreness and excoriation of the vulva, and necessitate frequent changes of underclothing or the constant wearing of the protective clothing. In severe cases the woman's life

becomes a misery; she feels a social outcast and avoids leaving the house.

Even more important, she ceases to buy new clothing and wears dark colours which will not show any stain. All those things which matter most in preserving youth and health become unattainable so the woman sits at home, eats to comfort herself and becomes fat. It is noticeable that many women with stress incontinence are overweight but, as suggested, this may be result rather than the cause of complaint.

In an effort to keep dry, most patients empty the bladder frequently, this however, does not prevent stress incontinence and a few drops often escape when the bladder is apparently empty. It is indeed a feature of stress incontinence that it occurs irrespective of the degree of fullness of the bladder.

Demonstration of stress incontinence : before accepting that a woman suffers from stress incontinence, it is essential to see the escape of urine when the patients coughs or strains, in this respects it should be noted that some women find it impossible to demonstrate incontinence except when they stand. It is therefore imperative that all women complaining of incontinence are examined both supine and erect.

Bonney test

This clinical test is often said to have the object of seeing whether an uplift of the urethrovesical junction will stop the incontinence during coughing. Victor Bonney himself described the application of pressure not uplift. A positive test merely shows that closure of the internal sphincter by pressure from the vagina controls the leak. It is therefore has limited value in the assessment of urinary incontinence.

Q-tip test

The Q tip test detects urethral hypermobility and assesses the likelihood of response to surgery.

The patient is placed in the lithotomy position, a lubricated sterile cotton tipped swab is passed through the urethra into the bladder and then withdrawn to the level of the urethrovesical junction, the axis of the urethrovesical junction at rest and after straining using a Valsalva manoeuvre is measured. If the cotton tipped swab moves upward by more than 30 degree after straining, it indicates urethral hypermobility. A negative Q tip test in a patient with previous failed surgery suggests genuine stress incontinence.

The emotional impact on the sufferers of urinary incontinence is extremely important. It affects their overall quality of life, placing limitation on their social activity, the way they dress, the distance they are willing to travel, sexual activity, and several other factors of day

to day life that continent women would not worry about. (Fultz and Herzog, 200).¹⁰

METHODS

The present study is a cross sectional study. It was conducted at Netaji Subhash Chandra Bose medical college and hospital from October 2016 to October 2017. A total of 418 women above 18 years of age who have none of the exclusion criteria (active UTI, pregnancy and 6 weeks postpartum, malignancy, any neurological illness, all patients with true illness) were included.

The study sample drawn from the patients attended gynecological OPD of NSCB Medical College Jabalpur. Data was collected using a predesigned proforma meeting the objectives of the study with their consent. Structured history followed by general physical examination, systemic and gynecological examination was carried out. Data on urinary leakage, type, frequency, amount, and impact of incontinence also recorded. Diagnosis was based on International UroGynecological Association (IUGA) guidelines considering symptoms and clinical evaluation only.

Sample size for prevalence study of stress urinary incontinence has been drawn using following formula of simple random sampling.

$$n = z^2pq/d^2$$

where:

n= required minimum sample size; z=1.96 (considering alpha =0.05, 95% confidence interval and 80% beta ‘power’); p=probability of prevalence of urinary incontinence which was assumed as 27.7% as given by Samuelsson et al).

$$q=1-p$$

d= precision error, which was considered 15% relative to the probability of assumed prevalence i.e.15% of 27.7%=4.155%)

This yielded 333 we have added 10% for lost on followup 10% for non response.

Thus the final sample size worked out to be 400 and we have collected sample of total 418 cases.

RESULTS

We have studied 418 cases out of which 77 (18.4%) cases were found to have stress urinary incontinence.

The prevalence of stress urinary incontinence increases with age.

Table 1: Association of risk factors with SUI.

Risk Factors	N/D (%)	OR (95% CI) 1 (reference)	P Value
Age (year)	≤40	0/284 (0)	4.65 (1.41-19.72)
	40-60	57/110 (51.81)	
	≥60	20/24 (83.33)	
BMI	<18.5 Underweight	0/188 (0)	14.33 (6.47-32.84)
	18.5-24.99 Normal weight	33/162 (20.37)	
	25-29.99 Over Weight	44/56 (78.57)	
	>30 Obese	0/12 (0)	
Parity	1	0/145 (0)	11.08 (4.80-25.99)
	2	13/157 (8.28)	
	3	28/56 (50)	
	4 and above	36/60 (60)	
Mode of delivery	NVD	77/310 (24.83)	20.40 (6.80-81.08)
	LSCS	0/108 (0)	
Nutritional status	Poor	47/100 (47)	3.05 (1.01-12.34)
	Average	26/222 (11.71)	
	Good	4/96 (4.16)	
Associated medical illness	Chronic cough	28/56 (50)	0.75 (0.32-1.74)
	Obesity	21/49 (42.85)	
	Hernia	16/32 (50)	
	Hysterectomy	12/24 (50)	1 (0.34-2.90)

In present study all the primipara were found to be continent. The prevalence of stress urinary incontinence

increases with increasing parity. The parity is strongly associated with urinary incontinence.

The prevalence of urinary incontinence is found to be higher following vaginal deliveries.

The prevalence stress urinary incontinence is found to be higher in poor nutritional status group, poor nutritional status results in weakness of pelvic supports and further precipitation of symptoms.

Chronic increase in intraabdominal pressure interferes with urethrovesical angle leads to stress urinary incontinence and poor support. Stress urinary incontinence can also be caused by intrinsic sphincter deficiency which can result from aging process, pelvic trauma or hysterectomy.

Obesity and overweight are the important risk factors for urinary incontinence. Excess body weight increases abdominal pressure and urethral mobility, leading to stress urinary incontinence and also exacerbating detrusor instability and overactive bladder. Like pregnancy obesity may cause chronic strain, stretching and weakening of the muscles, nerves and other pelvic floor structure.

DISCUSSION

In our study out of 418 women, 77 women reported stress urinary incontinence and prevalence was 18.4, which is quite similar to the study done by Singh U et al in their study the prevalence of stress incontinence was 16.13%.¹¹ Singh A et al found the prevalence of stress urinary incontinence was 24.5%.¹² These results are similar to most of the other studies done by Hagglund D et al, Sommer P et al, Kinchen KS et al in which also stress incontinence was highly prevalent. Brown et al reported 13% prevalence of stress incontinence.¹³⁻¹⁶

In age group <40yr, 284 cases were observed, and all of them were found to be continent.

In age group 40-60 yr 110 cases were observed, out of which 57 cases (51.81%) were having stress incontinence. In age group 60 yr and more, 24 cases were found, in which 20 cases (83.33%) had stress urinary incontinence. This shows that the prevalence of stress urinary incontinence increases with age.

Significantly high prevalence (38.4%) in women above 40yr is found by Singh A et al, Singh U et al reported that prevalence was low in females upto 30 yr of age in women above 30 yrs of age, the prevalence ranged from 27.8% to 42.8% with maximum prevalence in the age group of 61 to 70 yrs of age.^{11,12} It is similar to most of the other studies (36%-43%) in Chiarelli P et al and Danforth KN.^{17,18} In the study done by Nitti VW the prevalence is relatively low in early life, has a peak around the time of menopause and then rises steadily.¹⁹

In present study all the primi para were found to be continent. Out of 157 para 2 cases, 8.2% had stress

urinary incontinence. In 56 cases of para 3, 50% had stress urinary incontinence. In our study 60 cases were of para3 and more, in which 60% had stress urinary incontinence.

Significant relationship between parity and stress urinary incontinence was found to be similar with other studies, which increases with increasing parity. Out of all normally delivered cases 24.8% was having stress urinary incontinent. The cases who delivered by CS were 108 and none of them had stress urinary incontinence.

In this study the relationship of stress urinary incontinence and mode of delivery is similar to the result of Singh U et al, in which the prevalence of urinary incontinence in group of vaginal delivery was 26.84, and in group of caesarean delivery it was 8.59%.¹¹ Peyrat L et al and Bortolotti A et al also reported that urinary incontinence is more prevalent after vaginal deliveries.^{19,20} Among poor nutritional status the prevalence of stress urinary incontinence was 47%, among average nutritional status it was found 11.7% and 4.12% among good nutritional status.

Burkart NT et al found that people with poor diet and poor nutritional status had high prevalence of stress urinary incontinence. It is found to be more prevalent in people who take more tea and coffee, and liquid diet.

In this study we observed 56 cases of chronic cough out of which 50% had stress urinary incontinence. In obesity 42.9% had stress urinary incontinence. In all cases of hernia 50% had stress urinary incontinence. Among all the cases who undergone hysterectomy 50% had stress urinary incontinence.

The prevalence of stress urinary incontinence is high in females having chronic cough, obesity, hernia, or who undergone hysterectomy. The most biological plausible cause for the association between hysterectomy and Stress Incontinence is surgical trauma. Hysterectomy could interfere with urethral sphincter mechanism by damaging distal branches of pudendal nerves and inferior hypogastric plexus. Brown JS et al found that history of hysterectomy, recurrent urinary infection and perineal trauma increases the risk of all types of urinary incontinence.¹⁶

In cases with BMI <18.5, no one had urinary incontinence, all were found to be continent. In BMI 18.5-24.99 group 20.37% had stress urinary incontinence. In cases with BMI 25-29.99, 78.57% had stress urinary incontinence. In cases with BMI >30, 33.3% no one had stress urinary incontinence. Lopez et al. found that more than 45% of participants were either overweight (BMI 25-30) or obese (BMI>30). Stubaak LL et al found that obesity is a strong independent risk factor for urinary incontinence. Khullar et al reported that urinary incontinence has increased prevalence with increasing BMI.

CONCLUSION

Stress urinary incontinence amongst women is an undiagnosed problem leading to significant suffering. This study signifies how neglected women's health, post menopause particularly genitourinary health is. It also highlights the simple clinical diagnostic parameters needed to establish the presence of incontinence.

As people are living longer and the number of elderly keeps increasing, urinary incontinence becomes a very significant problem. Stress urinary incontinence has an impact on the quality of life and affects productivity and decreases activity levels in women.

It is imperative that more fundamental research to study the etiology and to try to optimize management options is done on stress urinary incontinence. This study demonstrate the prevalence of stress urinary incontinence, and it is important that awareness about this problem amongst the public and healthcare providers be encouraged. Treating urinary incontinence appropriately would greatly improve the quality of life of people suffering from this problem.

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