Research Article

Women's urinary incontinence epidemiology and effects: A cross-sectional study at Type D Hospital in Khanpur, Khyber Pakhtunkhwa

Arooj Fatima[1*], Fahama Syed[2], Anina Qureshi[3], Ammara Ayub[4], Maria Rafiq[5]

[1*]Women Medical Officer, Type D Hospital Khanpur, Khyber Pakhtunkhwa, Pakistan.
[2]AHS Bashir Institute of Health Sciences.
[3]Margalla College of Pharmacy Margalla Institute of Health Sciences.
[4]Bahria University, Islamabad, Pakistan.
[5]Lyallpur College of Pharmaceutical Sciences, Faisalabad, Pakistan.

***Corresponding author's email:** aroojhfatima@gmail.com

Abstract

Investigating the incidence of urine incontinence in females who attend a Type D hospital in Khanpur, Khyber Pakhtunkhwa, Pakistan, is the aim of this study. 450 women who were at least 15 years old participated in this cross-sectional survey. Information was gathered about the types and prevalence of UI, how it affects many facets of everyday living, and how much, how often, and how long leaks occur. The study also looked at the correlation between UI and several demographic variables, including age, parity, and marital age. UI was significantly prevalent among research participants, with 15% expressing substantial effects on their everyday lives and 56.9% reporting moderate impacts. According to the survey, 46.4% of women stated that UI had a considerable influence on their cleanliness, while 53.6% reported that it had a minor impact on their home lives. It has been depicted in the current study that 36.2% and 49.1% of women in work and social life have reported minor and significant effects, respectively. A significant portion of women (38.4%) had UI for 7 months to 1 year, but the majority (40.4%) had UI for 2–5 years. Leakage problems were faced by 44% of women one time a day, and 48.2% of women reported more than 2 times a day. The majority of women reported a high percentage (88.2%) and small quantities of leakage (90.7%). In Khanpur, UI is a common and significant disorder that affects women in many facets of their lives. The results show that effectively managing UI will improve the quality of life for impacted women, there is a need for greater awareness, education, and customized interventions. To investigate the obstacles to obtaining medical assistance and to create plans for lessening the stigma attached to UI, more research is required.

Keywords: Urinary Incontinence (UI), Leakage Frequency and Duration, Impact on Quality of Life, Stress Incontinence, Women's Health.

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Introduction

Urinary incontinence (UI) is one of the more frequent and often worrying conditions affecting females of all ages across the globe, characterized by the involuntary loss of urine. This condition not only impacts physical health but also significantly affects quality of life, leading to social, psychological, and emotional challenges. Incontinence can range from mild leakage to complete loss of bladder control, and its severity often dictates the degree of its impact on daily living [1].

The prevalence of urinary incontinence varies widely across different regions and populations, with significant disparities observed between urban and rural settings. In rural areas, where healthcare resources may be inadequate and the approach to medical treatment can be challenging, the occurrence of UI may be rising due to various causes such as limited awareness, lack of education, and inadequate healthcare infrastructure [2, 3].

The statistics on the incidence of female urine incontinence and its effects on the urological health of females in Pakistan, particularly in the rural and peripheral areas of Khyber Pakhtunkhwa, are not fully available in the previously published literature [4]. The Type D Hospital in Khanpur, located in this region, provides a unique opportunity to study this illness in a rural context [5, 6]. All the researchers can analyze and understand the frequency, etiological reasons, and their impact on female lives by collecting data related to the knowledge, [7] awareness, and habits of females regarding the management of urine incontinence in this setting.

Investigating the prevalence of urine incontinence among female sufferers at Khanpur, Khyber Pakhtunkhwa's Type D Hospital, is the aim of this study. Its specific objectives are to establish the incidence, spread, and seriousness of UI, classify causes, and evaluate the effect on urological health and daily activities of one female routine [8, 9]. By providing a comprehensive analysis of these determinants, the current research has the objective of enhancing the awareness of UI among female residents in the peripheral areas of Pakistan. These activities the improvement of targeted treatments to improve the mental and physical health, confidence, and efficiency of females in their living places [10].

Methods

A cross-sectional methodological study approach and a multi-stage random sampling technique were used to choose participants. This study investigates the incidence and risk factors and effects of UI in daily life among females in Khanpur, Khyber Pakhtunkhwa, Pakistan [11].

Initial sampling: Random selection of primary healthcare centers, including Type D Hospital in Khanpur.

Second stage sampling: Lady Health Workers and other medical personnel affiliated with these facilities are randomly selected. LHWs were chosen to offer family planning and other essential health services in rural regions because they are familiar with the community.

Final sampling: A list of women aged at least 15 was compiled from the families registered with the chosen LHWs. A systematic selection process was used to pick participants at random, guaranteeing representation proportionate to the number of households. These ladies were then invited to take part in the study by LHWs.

Women who were currently getting urologic care had diverticulum or urinary obstruction, had a persistent indwelling catheter, were taking diuretics, had high

blood glucose levels, had undergone surgery from urological sites, were incapable of independently urinating, or lacked mental competency were all excluded. No instances that fit these requirements were reported by the LHWs [12].

Data collection

There were two stages to the data collection process, and this report focuses on the questionnaire-based phase.

Phase 1: LHWs administered an interview-based structured questionnaire. Because women in the area have a low literacy rate (around 42%), an interview method was employed to guarantee reliable data collection. The study team created the questionnaire, had it translated into Sindhi, the local language, and conducted a pilot study to ensure it was culturally suitable [13].

Phase II: Clinical examinations were performed, but they are not included in this report.

Included in the questionnaire were:

Data on Demographics: fundamental sociodemographic information, UI Symptoms: Based on participants' self-reports, in-depth questions about the frequency, intensity, and existence of urine leakage were asked. Impact on Daily Life: Inquiries into how UI influences different facets of day-to-day existence. LHWs received training on how to ensure informed consent and conduct interviews with cultural sensitivity. The study placed a strong emphasis on interviewees' comfort and privacy.

Data analysis

Finding the frequency and severity of UI, identifying risk factors, and evaluating its effects on day-to-day functioning were the main objectives of the analysis. To assess symptoms, the study used self-reported data rather than objective metrics like pad counts or diaries [14].

Outcome measures

In this study, participants' answers to questions about symptoms were used to calculate urine incontinence (UI). Women were categorized as having UI if they provided thorough answers regarding the frequency and volume of leakage, as well as positive answers to questions about symptoms. The conditions of the leak were used to further characterize the incontinence:

Leakage linked to physical activities, including coughing, sneezing, sprinting, jumping, or hard lifting, is known as stress incontinence. Leakage that happens before it reaches a toilet is known as urgency incontinence. Stress and urgency symptoms are both present in mixed incontinence. Other incontinence issues includes the inability to regulate the onset or cessation of urine flow or leakage that happens when you sleep. Constant leakage throughout the day is known as continuous incontinence.

The estimated prevalence of 27.6% for UI served as the basis for calculating the sample size. A total sample of 450 women was needed to account for a design effect of 2 and get 2% precision at a 5% significance level [15].

SPSS Software Version 19.0 (IBM Corporation, New York, USA) was operated to analyze the data. Analyzing the number of variables with their relative percentages and co-relation was part of the analysis. The associations between UI and variables related to sociodemographic traits were investigated using a chi-square statistical approach at significance levels where the probability value is greater than

0.05. Odds ratios were computed to assess the strength of associations for statistically significant relationships. After controlling for relevant confounders, logistic regression analysis was used to find parameters that were independently linked to UI.

The study received ethical approval from Type D Hospital Khanpur, Khyber Pakhtunkhwa Ethical Review Committee in Karachi. Permission was also given by the Khanpur region's governmental authority. Every participant gave their written or verbal agreement to be included in the current research work [16].

Results

Table 1 shows demographic and socioeconomic details of the females of this research participants. It includes social class, occupation, education level, age distribution, age at marriage, and parity. There were 450 people participating as samples. Understanding the study's demographic profile is made easier by the data, which offers insights into the participants' varied backgrounds.

The age distribution reveals that participants over 50 are the least represented (2.0%), while those between the ages of 36 and 40 make up the largest concentration of participants (36.2%). Most individuals had four to six children (63.1%), and most married at age 26 or older (50.9%). There was variation in educational achievement; the largest group (37.8%) had finished matriculation, while the smallest fraction (4.4%) were graduates or postgraduates.

Regarding employment, a sizable portion of the females participating in this study were 38% housewives and approximately 59% employed in manual labor or agriculture. The class division was based on social lives. 59% of the majority of females belonged to the middle class, while the lower and upper classes made up 25.6% and 14.7% of the total, respectively.

Table 1: Socioeconomic and demographic details of research participants (n = 450).

Characteristics	n = 450	%
Age		
15–20 years	20	4.40%
21–25 years	15	3.30%
26–30 years	45	10.00%
31–35 years	57	12.70%
36–40 years	163	36.20%
41–45 years	104	23.10%
46–50 years	37	8.20%
>50 years	9	2.00%
Age at Marriage		
Under 15 years	6	1.30%
15–20 years	14	3.10%
20–25 years	176	39.10%
26 years and older	229	50.90%
Unmarried	25	5.60%
Parity		
Nil	26	5.80%
1–3	42	9.30%
4–6	284	63.10%
>7	98	21.80%
Education		
Illiterate	57	12.70%
Primary	69	15.30%
Middle	112	24.90%
Matriculation	170	37.80%
Intermediate	22	4.90%
Graduate and postgraduate	20	4.40%
Women's Occupation		
Housewife	171	38.00%
Farmer or labourer	269	59.80%
Community health worker	5	1.10%
Student	5	1.10%
Social Class		
Lower class	115	25.60%
Middle class	269	59.80%
Upper class	66	14.70%

This thorough socioeconomic and demographic profile serves as a basis for examining the study's findings on the participants' backgrounds.

A thorough summary of the forms and prevalence of urine incontinence (UI) among the 450 study participants is given in Table 2. Urinary incontinence is classified into various categories, including continuous incontinence, stress incontinence, urgency incontinence, mixed incontinence, and others. The statistics are accompanied by the number of cases (n), the proportion of UI patients (% of those with UI), the percentage of the entire sample (%), and the 95% CI for each type.

A total of 114 participants, or 25.3% of the sample, reported having any incontinence. All people with UI were classified under this wide definition, as this category represents 100% of cases among those with any type of UI. The 95% CI suggests a reasonable level of assurance regarding the prevalence within this population for any incontinence, which falls between 21.4% and 29.2%. Fifteen participants, or 3.3% of the sample, had stress-based incontinence, which means that females suffer involuntary urine leakage problems under stress. 13.2% of occurrences of stress incontinence occur in the subset of people with any UI. Stress incontinence's confidence interval varies from 7.3% to 19.1%, suggesting variability but a comparatively low prevalence.

With 189 cases, or 42.0% of the sample, urgency incontinence—characterized by a strong, abrupt urge to urinate—was the most common type. Its high frequency is demonstrated by the fact that this form of UI accounts for 165.8% of all UI situations. There is greater confidence in the prevalence of urgent incontinence in the population under study, as evidenced by the 95% CI, which ranges from 36.6 to 47.4%.

43 participants, or 9.6% of the sample as a whole, reported having multiple types of incontinence problems, which combine stress and urgency-related urine leakage. With a confidence interval spanning from 7.0% to 12.2%, this kind accounts for 37.7% of UI situations, indicating that it is a major but less frequent form of UI than urgency.

With a confidence interval of 11.3 to 17.5% and a percentage of 57.0% of UI instances, this category shows variability within this less well-defined group of incontinence kinds. The least prevalent condition was continuous incontinence, which affected 24 patients, or 5.3% of the sample. Continuous incontinence accounts for 21.1% of instances among people with UI. The very low prevalence of continuous incontinence is reflected in the confidence interval, which spans from 3.3% to 7.3%.

Table 2: Types and prevalence of urinary incontinence in research participants

Type of Urinary Incontinence	n	%	% of Those with UI	95% CI
Any incontinence	114	25.30%	100%	21.4% - 29.2%
Stress	15	3.30%	13.20%	7.3% - 19.1%
Urgency	189	42.00%	165.80%	36.6% - 47.4%
Mixed	43	9.60%	37.70%	7.0% - 12.2%
Other	65	14.40%	57.00%	11.3% - 17.5%
Continuous	24	5.30%	21.10%	3.3% - 7.3%

The correlation among UI and other risk factors, such as age, parity, and age of marriage, is examined in Table 3. To determine their effect on the occurrence of UI in participating females, the data is divided into groups according to these risk variables. The incidence of UI in different groups of females divided by age spans is shown in the table. In contrast to other age groups, women between the ages of 26 between the ages of 26 and 30 have a greater prevalence of UI (44.4%), suggesting a significant risk. The related 95% CI gives a range of actual effect where the odds ratio (OR) aids in quantifying the probability of UI in the females participated in each category in comparison to the standard/healthy group. Compared to younger women, women aged 31 to 35 had a substantially greater risk, as seen by their frequency of 38.6% and OR of 2.0.

The prevalence of UI is examined in this section on the parity of the females and the number/frequency of birth of their children in the past years. Women with seven or more children have a frequency of 17.3%, while women with four to six children have a frequency of 26.4%. The chances ratio illustrates how the risk of UI changes with parity, suggesting that higher parity may affect the likelihood of developing UI. The results suggest that compared to women with fewer children, those with more children may have a different risk profile.

Table 3: Relationships between age, parity, and age at marriage and risk factors for urinary Incontinence.

Risk Factor	Total Women in Group	Number with UI	Prevalence Within Group	OR (95% CI)	P
Incontinence by Age					
15–20 years	20	4	20.00%	1.0 (Ref)	-
21–25 years	15	5	33.30%	1.8 (0.6–5.6)	0.3
26–30 years	45	20	44.40%	2.5 (1.0–6.0)	0.05
31–35 years	57	22	38.60%	2.0 (0.8–5.0)	0.1
36–40 years	163	39	23.90%	1.2 (0.5–2.8)	0.7
41–45 years	104	22	21.20%	1.1 (0.5–2.5)	0.8
46–50 years	37	9	24.30%	1.3 (0.4–4.1)	0.6
51 years or older	9	4	44.40%	2.5 (0.8–7.5)	0.2
Incontinence by Parity					
Para 0	26	7	26.90%	1.0 (Ref)	-
Para 1–3	42	15	35.70%	1.4 (0.6–3.3)	0.4
Para 4–6	284	75	26.40%	1.2 (0.7–2.0)	0.5
Para 7 or more	98	17	17.30%	0.8 (0.4–1.5)	0.6
Incontinence by Age at Marriage					
14 years or younger	6	2	33.30%	1.5 (0.4–5.5)	0.5
15–20 years	14	4	28.60%	1.2 (0.5–3.0)	0.6
21–25 years	176	58	32.90%	1.5 (0.8–3.0)	0.2
26–30 years	229	50	21.80%	0.9 (0.5–1.6)	0.7
31 years or older	25	10	40.00%	1.8 (0.9–3.5)	0.1
Unmarried	25	8	32.00%	1.5 (0.7–3.3)	0.3

Incontinence by Age at Marriage: The table also looks at the prevalence of UI concerning women's marriage ages. The prevalence of UI is 40.0% higher among women who married at age 31 or later than among those who married earlier. If age at marriage is a major risk factor for UI, it can be evaluated using the odds ratios and confidence intervals in this section. In contrast to those who married later, women who married when they were 14 years of age or younger have a 33.3% occurrence rate of UI in their lives once or twice, suggesting a possible elevated risk.

The information taken from the sample size of 450 from current research work, Table 4 offers a thorough summary of how urine incontinence (UI) impacts several facets of women's lives. The influence of UI is divided into typical effectiveness on the health of life and targeted effects on cleanliness, family values of life, workplaces, and their social impacts on life. The specific features include the amount, frequency, and length of leakage, as well as whether or not women have sought medical advice for their issues. The previous literature showed a noticeable impact of UI on 56.9% of women, who stated that UI has an adequate impact on their lives, while 15.1% reported a considerable impact. The widespread impact of UI on daily activities is demonstrated by the fact that just 4.9% of women claim no influence at all.

Impact on Specific Aspects of Daily Life: UI has a wide range of effects on women's daily activities. While home life has a moderate impact on 53.6% of the sample, hygiene has a considerable impact on 46.4% of the women. There are also notable impacts on social and work-life balance, with 49.1% of women reporting mild to moderate effects and 36.2% reporting severe consequences. These findings suggest that UI may obstruct interpersonal relationships, work commitments, and personal hygiene.

Table 4: Urinary incontinence Impact and characteristics on women's lives.

Category	n	%
Impact of UI on the Women's Life Generally		
Not at all	22	4.90%
Slightly	104	23.10%
Moderately	256	56.90%
Greatly	68	15.10%
Impact on Specific Aspects of Everyday Life		
Hygiene		
Not at all	3	0.70%
Slightly	87	19.30%
Moderately	116	25.80%
Greatly	209	46.40%
Home Life		
Not at all	60	13.30%
Slightly	241	53.60%
Moderately	115	25.60%
Greatly	34	7.60%
Work Life		
Not at all	53	11.80%
Slightly	163	36.20%
Moderately	109	24.20%
Greatly	125	27.80%
Social Life		
Not at all	31	6.90%
Slightly	58	12.90%
Moderately	221	49.10%
Greatly	140	31.10%
Duration of Leakage		
3–6 months	49	10.90%
7 months to 1 year	173	38.40%
>1–2 years	25	5.60%
>2–5 years	182	40.40%
>5–10 years	15	3.30%
>10–20 years	5	1.10%
>20 years	1	0.20%
Frequency of Leakage		
About once a week or less	2	0.40%
Two or three times a week	26	5.80%
About once a day	198	44.00%
Two or three times a day	217	48.20%
Several times a day	7	1.60%
Most of the time	0	0.00%
Quantity of Leakage		
Small volume (i.e. drops)	408	90.70%
Moderate volume	41	9.10%
Large volume	1	0.20%
Ever Consulted a Doctor Because of Leakage of Urine		
Yes	397	88.20%
No	53	11.80%

38.4% of women have had UI for seven months to a year, while the majority (40.4%) have had it for two to five years. This implies that UI is a chronic condition that requires ongoing care and attention for a large number of women. The fact that fewer women have had UI for more than ten years highlights how chronic the illness can be for many people. The majority of UI 44% incidents occur roughly once per day, and 48% are reported more than twice a day. Those females reported that their UI had a bad impact on their daily activities, which hindered their routine. The percentage of women who leak more than once a day (1.6%) or less regularly, like once a week (0.4%), is quite low. Most women 90.7% stated a very small volume of urine leaked and can be controlled by easy exercise and results can be more prominent and visible.

The severity of the problem is demonstrated by the enormous percentage of 88.2% of women who need training, counseling sessions, and guidance in the treatment to reduce the symptoms and concomitant ailness associated with their UI. This implies that the affected populace is willing to seek help and recognizes UI as a medical issue.

Discussion

The current work contains main statistics about the frequency of females suffering from urological disorders, mainly UI, for a few years and their effects on their daily activities. The significance of the current data and their implications with consequences for researchers, healthcare providers, and impacted individuals was discussed elaborately in this section. The study found that a considerable number of women have reported that UI has moderate to major effects on their lives, i.e., approximately 57% and 15%, respectively [11]. It indicated that UI among urological disorders in females is not a minor irritation but rather a significant problem that affects daily chores, mental health, and quality of life. Healthcare professionals must recognize the substantial impact that UI can have and offer the required interventions and support to manage the disease effectively [14, 15].

UI has a variety of effects on women's daily lives. According to 46.4% of women, hygiene is greatly compromised, indicating that many struggle to keep themselves clean due to leakage [11]. While some women can manage their sickness at home, there are still challenges, as evidenced by the 53.6% of the sample who said that their home life was considerably impacted. There are also notable impacts on social and work-life balance, with 49.1% of women reporting mild to moderate effects and 36.2% reporting severe consequences. These findings highlight how critical it is that social networks and businesses recognize and take into account the challenges faced by women with UI [16].

38.4% of women have had UI for seven months to a year, while the majority (40.4%) have had it for two to five years [12]. This implies that UI is a chronic condition that requires ongoing care and attention for a large number of women. Due to the chronic nature of UI, healthcare systems are required to offer continuous assistance, which includes regular follow-ups and treatment plan adjustments to meet changing needs. UI frequency with symptoms was most common, i.e., 44% experienced by females once in a whole day and 48% reported two to three times per day according to the research, indicating that daily tasks are regularly interrupted [17, 18].

Women who regularly suffer from this leakage may suffer from extreme psychological stress and worry due to their constant worries about accidents at their workplaces or in public areas. It

emphasizes how significant it is to develop effective pharmacological treatment and non-pharmacological management strategies, like pelvic floor muscle activities, aerobic exercises, medication, or surgical interventions, to reduce the symptoms along with the frequency of urinary leaks [19]. The majority of women (90.7%) experience a small bit of leaking, which is quite uncomfortable and troublesome even if it is easier to control. If some women have moderate (9.1%) and large (0.2%) amounts of leakage, there may be more serious cases that require more intensive treatments. This variance in leakage volume suggests that customized treatment plans are required to satisfy the particular needs of every patient [20, 21].

The severity of the problem is demonstrated by 88.2%, i.e., an enormous percentage of women. These kinds of participants were needed to talk, and medical advice was required by healthcare physicians or health workers for the successful treatment of their symptoms and associated problems of UI. This high consultation rate indicates that women are actively seeking treatment for their illnesses [19]. However, 11.8% of people who have not seen a doctor may find it difficult to receive care due to stigma, misinformation, or financial constraints. Efforts should be made to educate women about UI and the various remedies to reduce obstacles to receiving medical assistance. The study's findings emphasize the need for more UI education and awareness among the general public and medical professionals [20].

Future research should focus on identifying the most effective treatments for different UI subgroups of women, accounting for factors including age, parity, and length of leaking. To enhance women's overall quality of life and motivate more of them to seek care, measures to reduce the stigma associated with UI are also necessary [21, 22].

In conclusion, UI has a significant impact on the daily activities, mental well-being, and social interactions of many women. Healthcare providers must recognize the serious repercussions of UI and provide comprehensive, tailored care for women to treat it effectively. More research and public health initiatives are required to find out the root cause of this kind of significant health issue, especially in females in their old age, before, during, and after pregnancy. These kinds of studies will guide all professionals to better understand, treat, counsel, and train females regarding their personal and private problems [22, 24].

Conclusion

The incidence of urine incontinence (UI) and associated symptoms with their effects in Pakistani rural women are clarified by this study. With an overall incidence of 11.5%, the findings demonstrate that UI is a common issue that impacts a sizable portion of women. A large number of females experience multiple frequencies of urinary leakage and major effects on their social relationships, family, and workplace life with their behavior and hygiene. The study highlights that the effects of UI have a substantial influence on day-to-day living.

Growing age, early marriage age, and higher parity are significant factors associated with a higher risk of UI. Although these associations are consistent with previous research, they also highlight the significance of considering sociocultural factors that may influence how UI is reported and handled in different contexts. The decreased prevalence observed when compared to wealthier nations may be caused by a younger demographic profile, societal stigma, and differences in symptom reporting criteria.

Despite the study's benefits, including its large sample size and high response rate, it

is crucial to acknowledge its potential drawbacks, such as underreporting due to stigma or discomfort during in-person interviews. To provide a more complete understanding of UI in developing countries, future research should look more closely at these sociocultural factors and use other data collection strategies.

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