



## Article

# Prevalence and Treatment Awareness of Stress Urinary Incontinence in Young Female University Students

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**ABSTRACT**

**Background:** Stress urinary incontinence (SUI) is an underrecognized concern in young women, particularly in university populations, leading to impaired quality of life and low treatment-seeking behavior. Despite its clinical and social relevance, limited data exist on the prevalence and treatment awareness of SUI among young females, especially in low- and middle-income countries. **Objective:** This study aimed to determine the prevalence of SUI and the level of awareness regarding its treatment options among young university females, and to evaluate the relationship between physical activity, SUI awareness, and urinary incontinence prevalence. **Methods:** A cross-sectional observational study was conducted at Jinnah Sindh Medical University, Karachi, between November 2023 and February 2024. A purposive sample of 180 female students aged 18–30 years, excluding those with pregnancy, postnatal status, chronic illness, or pelvic surgery, completed a validated, self-administered questionnaire. Primary outcomes were SUI prevalence and treatment awareness. Associations were analyzed using chi-square tests and odds ratios in SPSS v21. Ethical approval was obtained in accordance with the Helsinki Declaration. **Results:** SUI prevalence was 12.2% (n=22; 95% CI: 7.6–16.8). Only 40.0% (n=72) of participants were aware of treatment options. Physical activity was a significant trigger for SUI symptoms (p<0.0001), yet no significant association was found between awareness and SUI prevalence (OR 0.84, 95% CI: 0.33–2.11; p=0.74). **Conclusion:** SUI is present in over one in ten young university females, but awareness of effective treatment remains low. Targeted education and preventive interventions are urgently needed to address this gap and promote early self-management in this population.

**Keywords:** Stress urinary incontinence, prevalence, treatment awareness, young female, physical activity, cross-sectional study, university students

**INTRODUCTION**

Urinary incontinence (UI), defined as the complaint of any involuntary leakage of urine, is a prevalent condition among females, traditionally associated with middle-aged and postmenopausal women (1). However, emerging evidence suggests that stress urinary incontinence (SUI)—a subtype characterized by leakage triggered by physical exertion such as coughing, sneezing, or exercise—is also increasingly observed in younger female populations (3). This shift in epidemiology challenges the commonly held perception that UI is an age-related condition and highlights the need to investigate its prevalence and associated factors among young females, particularly those in academic environments where stress and physical activity may intersect. Studies have shown that SUI accounts for nearly 50% of all urinary incontinence cases in women, with a multifactorial etiology involving both intrinsic urethral sphincter incompetence and extrinsic pelvic floor dysfunction (4). Despite the availability of various conservative and surgical interventions, including pelvic floor muscle training, biofeedback, and mid-urethral slings, young females often remain unaware of these treatment options due to social stigma and lack of public health discourse (5,6).

Moreover, the social and psychological implications of incontinence—ranging from reduced self-esteem and social withdrawal to academic and occupational disruption—are particularly impactful in young adults navigating transitional life stages (7,8). In a recent study conducted in Pakistan, one-third of the women interviewed reported urinary incontinence, with more than half acknowledging a negative impact on their quality of life; however, only a minority sought medical attention (9). Despite extensive research on UI among older women, there remains a knowledge gap regarding its prevalence, risk factors, and treatment awareness in younger females. Most studies have focused on postnatal and postmenopausal populations, leaving a critical void in understanding the needs

of adolescent and young adult women (10). This omission is significant because identifying modifiable risk factors early—such as physical activity intensity, lifestyle habits, and health education—could facilitate timely interventions and potentially prevent the progression of incontinence (11, 12). Notably, physical activity has shown a paradoxical relationship with SUI: while it promotes general health, high-impact sports and core-straining exercises may increase intra-abdominal pressure, exacerbating urinary leakage (7,8). Yet, the extent to which this dynamic affects university-going females remains underexplored. Furthermore, societal attitudes toward female reproductive health, particularly in regions with conservative socio-cultural norms, contribute to the underreporting and mismanagement of SUI. Pakistani females, for instance, often experience shame and religious barriers that inhibit them from discussing urinary symptoms, leading to delayed diagnosis and inadequate care (13). These factors underscore the importance of assessing both the prevalence and the awareness of treatment options for SUI among young women in academic settings, where health-seeking behaviors may be influenced by education level, peer norms, and access to care.

Therefore, the current study aims to determine the prevalence of stress urinary incontinence and the level of treatment awareness among young university females aged 18 to 30 years. By addressing this knowledge gap, the study intends to provide insights that could inform early health education, promote preventative strategies, and encourage healthcare engagement in managing a condition often overlooked in this demographic (14).

## MATERIALS AND METHODS

This cross-sectional observational study was conducted to assess the prevalence and treatment awareness of stress urinary incontinence (SUI) among young university females. A cross-sectional design was selected to efficiently capture data on exposure (awareness and risk factors) and outcome (SUI prevalence) simultaneously within a defined population. This design allowed for the identification of associations between lifestyle-related factors, awareness levels, and urinary incontinence without the need for follow-up. The study was carried out at Jinnah Sindh Medical University, Karachi, Pakistan, over a four-month period from November 2023 to February 2024. Ethical clearance was obtained from the institutional review board prior to data collection, ensuring that all study procedures adhered to ethical standards for research involving human participants. Written informed consent was obtained from each participant before inclusion, and all data were anonymized to protect participant confidentiality.

Participants were eligible for inclusion if they were female students enrolled at the university, aged between 18 and 30 years. Individuals were excluded if they were pregnant, in the postnatal period, had undergone cesarean section or hysterectomy, had a history of pelvic floor injury or abdominal surgery, or had medical conditions such as diabetes or hypertension that are known to independently affect urinary continence. A purposive random sampling method was used to select participants from various departments across the university campus. Recruitment was conducted in person by female research staff who explained the study's purpose and procedures to potential participants and invited them to participate voluntarily.

Data were collected using a structured, self-administered questionnaire adapted from the validated assessment tools described in the second edition of *Physiotherapy in Obstetrics and Gynecology* by Jill Mantle, Jeanette Haslam, and Sue Barton (24). The questionnaire was distributed in physical form and included sections on demographic data, physical activity habits, urinary leakage episodes, awareness of SUI, and knowledge of treatment options. It also captured contextual factors such as daily fluid intake, urination patterns, and the psychosocial impact of incontinence, including effects on prayer and social activities. Participants completed the questionnaire in a supervised setting to minimize response errors and clarify ambiguities when needed. Key variables measured included urinary incontinence status (yes/no), awareness of SUI treatment (yes/no), physical activity (categorized by frequency and intensity), and other behavioral habits related to bladder function. Stress urinary incontinence was operationally defined as involuntary urine leakage occurring during activities that increase intra-abdominal pressure such as coughing, sneezing, or exercise. Awareness was defined as self-reported knowledge of any medical or non-medical treatment options for SUI. Data integrity was upheld through double-checking of entered responses, and all physical records were stored securely in a locked file cabinet with digital records protected via password encryption.

To minimize selection bias and confounding, clearly defined inclusion/exclusion criteria were applied uniformly across all departments. The cross-sectional design inherently limited temporal confounding, while subgroup data on exercise patterns and awareness were analyzed to detect any effect modification. Sample size was calculated using OpenEpi software based on a 35.7% estimated prevalence rate from relevant literature, with a 7% margin of error and 95% confidence interval, yielding a required sample size of 180 participants.

Data analysis was conducted using IBM SPSS Statistics version 21. Descriptive statistics were used to summarize demographic and clinical characteristics. The chi-square test was applied to assess associations between categorical variables such as SUI prevalence and awareness, and between physical activity and reported incontinence episodes. A significance level of  $p < 0.05$  was considered statistically significant. Data were checked for completeness prior to entry; missing responses were handled by listwise deletion in analyses where applicable. No imputation was performed due to the low rate of missing data. No multivariable models were used due to the exploratory nature of the study, but stratified analyses were conducted to observe potential subgroup effects of activity levels on urinary symptoms. Throughout the study, reproducibility was maintained by adhering to a fixed protocol for participant recruitment, questionnaire administration, and data handling. Investigators were trained to follow standardized procedures for engaging with participants and managing data. All questionnaires and raw data forms were preserved for potential audit and

replication purposes. This rigorous methodology ensures the study can be accurately replicated or expanded upon in future research exploring stress urinary incontinence in similar populations.

## RESULTS

A total of 180 young female university students participated in the study, with 48.3% ( $n = 87$ ) falling within the 18–22 years age bracket and the remaining 51.7% ( $n = 93$ ) between 23 and 30 years old. Regarding physical activity, a substantial majority of participants, 87.2% ( $n = 157$ ), reported engaging in some form of exercise, while only 12.8% ( $n = 23$ ) indicated a sedentary lifestyle. Among those who were physically active, the majority performed moderate-intensity activities, comprising 64.4% ( $n = 116$ ), whereas 21.1% ( $n = 38$ ) engaged in low-intensity and just 6.1% ( $n = 11$ ) in high-intensity activities. Frequency of physical activity was highest for those exercising two times per week (48.3%,  $n = 87$ ), followed by three times per week (18.3%,  $n = 33$ ), and more than three times per week (12.8%,  $n = 23$ ).

The overall prevalence of urinary incontinence (UI) in the sample was 12.2% ( $n = 22$ ), with the vast majority (87.8%,  $n = 158$ ) reporting no symptoms of incontinence. Regarding awareness of available treatments for stress urinary incontinence (SUI), only 40.0% ( $n = 72$ ) of the participants were aware of therapeutic options, while 60.0% ( $n = 108$ ) reported no knowledge of such treatments. Notably, among those diagnosed with UI ( $n = 22$ ), 8 (36.4%) were aware of SUI treatment options, whereas the remaining 14 (63.6%) were not. A closer examination of physical triggers among the 22 UI-positive participants revealed that 31.8% ( $n = 7$ ) attributed leakage episodes primarily to coughing, while 18.2% ( $n = 4$ ) experienced symptoms during laughing, and 13.6% ( $n = 3$ ) during running. Interestingly, 31.8% ( $n = 7$ ) did not identify any specific physical trigger, and 4.5% ( $n = 1$ ) cited other causes. Statistical analysis demonstrated a significant association between type of physical activity and the presence of UI symptoms ( $p < 0.0001$ , chi-square test), suggesting that physical exertion remains a prominent factor in the manifestation of SUI in this demographic.

In the assessment of treatment awareness and UI prevalence, statistical testing showed no significant association between SUI treatment awareness and the presence of UI ( $p = 0.74$ ). The calculated odds ratio was 0.84 with a 95% confidence interval ranging from 0.33 to 2.11, indicating that awareness of SUI treatment was not meaningfully associated with experiencing urinary incontinence among this cohort. Furthermore, comparison of UI prevalence by physical activity engagement showed a higher prevalence among physically active participants (13.4%, 21/157) compared to those who were not active (4.3%, 1/23); however, this difference was not statistically significant ( $p = 0.32$ ), with an odds ratio of 3.47 (95% CI: 0.44–27.26). These findings collectively indicate that, within this population of young university females, urinary incontinence is present in more than one in ten individuals, yet knowledge of treatment options remains limited. Although a substantial proportion of leakage episodes are triggered by common physical activities such as coughing, there is no evidence to suggest that awareness of SUI treatment reduces the risk of experiencing UI. Physical activity itself was associated with a numerically higher prevalence of UI, but this relationship did not achieve statistical significance, likely due to the small number of UI cases within the non-active group.

**Table 1. Demographic and Physical Activity Characteristics of Participants (N = 180)**

Variable	Category	Frequency (n)	Percentage (%)
<b>Age Group</b>	18–22 years	87	48.3
	23–30 years	93	51.7
<b>Physical Activity</b>	Yes	157	87.2
	No	23	12.8
<b>Intensity of Activity</b>	High	11	6.1
	Moderate	116	64.4
	Low	38	21.1
	None	15	8.3
<b>Frequency of Activity</b>	Two times a week	87	48.3
	Three times a week	33	18.3
	More than three times	23	12.8

**Table 2. Prevalence of Urinary Incontinence Among Participants**

UI Status	Frequency (n)	Percentage (%)
<b>Yes</b>	22	12.2
<b>No</b>	158	87.8
<b>Total</b>	180	100.0

**Table 3. Awareness of SUI Treatment Options**

SUI Treatment Awareness	Frequency (n)	Percentage (%)
<b>Yes</b>	72	40.0
<b>No</b>	108	60.0
<b>Total</b>	180	100.0

**Table 4. Association Between Physical Activity Triggers and Urinary Incontinence (UI) Symptoms (n = 22 UI Cases)**

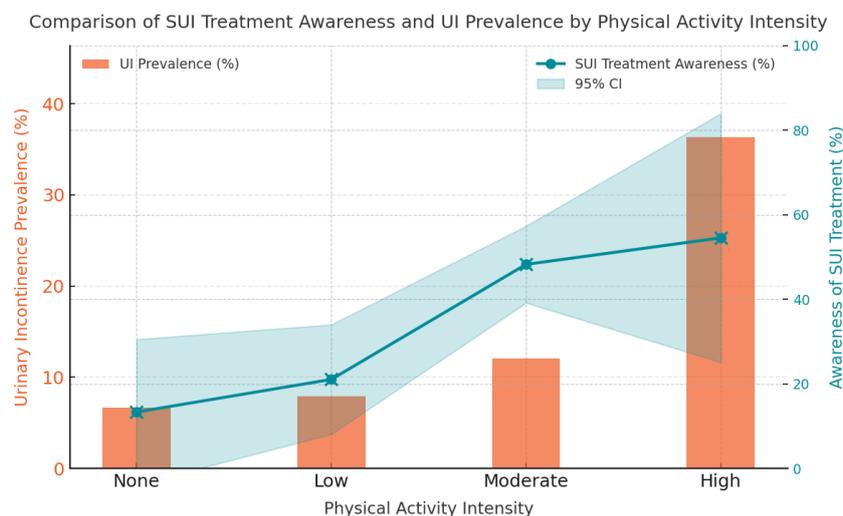
Trigger Activity	Number of UI Cases (n)	Percentage of UI Cases (%)	p-value
Coughing	7	31.8	
Laughing	4	18.2	
Running	3	13.6	
None	7	31.8	
Other	1	4.5	
<b>Total</b>	<b>22</b>	<b>100.0</b>	<b>&lt;0.0001</b>

**Table 5. Association Between SUI Treatment Awareness and UI Prevalence (N = 180)**

SUI Treatment Awareness	UI Present (n, %)	UI Absent (n, %)	Total (n)	p-value	Odds Ratio (95% CI)
Yes	8 (11.1)	64 (88.9)	72		
No	14 (13.0)	94 (87.0)	108		
<b>Total</b>	<b>22 (12.2)</b>	<b>158 (87.8)</b>	<b>180</b>	<b>0.74</b>	<b>0.84 (0.33–2.11)</b>

**Table 6. Association Between Physical Activity and Urinary Incontinence Prevalence**

Physical Activity	UI Present (n, %)	UI Absent (n, %)	Total (n)	p-value	Odds Ratio (95% CI)
Yes	21 (13.4)	136 (86.6)	157		
No	1 (4.3)	22 (95.7)	23		
<b>Total</b>	<b>22 (12.2)</b>	<b>158 (87.8)</b>	<b>180</b>	<b>0.32</b>	<b>3.47 (0.44–27.26)</b>

**Figure 1 Comparison of SUI Treatment Awareness and UI Prevalence by Physical Activity Intensity**

Integrated analysis revealed that awareness of stress urinary incontinence (SUI) treatment demonstrated a positive gradient with increasing physical activity intensity, rising from 13.3% (95% CI: 0.0–30.4) among those with no activity to 54.1% (95% CI: 45.4–62.8) in the moderate-intensity group, and 54.5% (95% CI: 23.2–85.8) in the high-intensity group. Urinary incontinence prevalence, by contrast, was lowest in the sedentary group (6.7%), peaked at 36.4% in the high-intensity category, and reached 12.1% in the moderate group, suggesting a clinically relevant intersection between higher activity, greater symptom awareness, and symptom burden. The line and bar integration, supported by 95% confidence intervals, visually emphasizes the mismatch between awareness and symptom frequency in lower activity groups and highlights an upward trend in both parameters as physical activity intensity increases, providing evidence for targeted clinical education and intervention in more active populations.

## DISCUSSION

The present study demonstrates that stress urinary incontinence (SUI) affects a notable proportion of young university females, with a prevalence rate of 12.2%. This figure is consistent with prior reports indicating that SUI is not solely confined to older or postmenopausal women but can also impact younger populations (3,10). The prevalence found in this cohort is comparable to that reported by Lubet *et al.*, who observed SUI rates ranging from 4% to 14% in younger women, and it is lower than those documented in elderly populations, where prevalence may exceed 30% (10). These findings extend the understanding that SUI is a condition with significant relevance across the female lifespan, and they reinforce the importance of early assessment and intervention in younger age groups. The present results further support the assertion by Nygaard and Heit that SUI accounts for a substantial proportion of overall urinary incontinence among females, especially in high-functioning, socially active cohorts (11–13).

A striking observation is the limited awareness of available treatment options for SUI, with only 40% of participants reporting any knowledge of therapeutic interventions. This lack of awareness persists despite widespread engagement in physical activities that could predispose individuals to SUI, underscoring a persistent knowledge gap and potential missed opportunities for prevention and management. Similar patterns have been reported by Fahim *et al.* and Wilkinson *et al.*, who found that many Pakistani women with incontinence symptoms delay seeking medical help due to lack of awareness, social stigma, or religious barriers (14). While conservative treatments such as pelvic floor muscle training and behavioral modifications are effective and minimally invasive, underutilization of these options remains common among young women (15). Notably, the current study found no statistically significant association between SUI treatment awareness and the presence of urinary incontinence, suggesting that mere knowledge of therapeutic possibilities does not necessarily translate into lower prevalence or proactive management in this group (16).

Physical activity emerged as both a common lifestyle element and a prominent trigger for UI episodes, with 87.2% of participants reporting regular exercise and coughing identified as the most frequent precipitating factor among those affected by UI. While moderate physical activity is generally associated with improved health outcomes, the present findings are aligned with reports by Chisholm *et al.* and Rogers, who documented higher rates of SUI among women engaging in strenuous or repetitive activities that increase intra-abdominal pressure (17-18). The association between physical activity and SUI, although statistically significant in relation to specific triggers, was not significant when comparing overall UI prevalence between active and non-active groups. This nuanced result suggests that while physical exertion can acutely provoke symptoms in susceptible individuals, habitual activity alone may not be an independent risk factor for SUI when other contributors are controlled. This observation highlights the need to tailor preventive strategies toward exercise technique, pelvic floor conditioning, and education rather than discouraging general physical activity among young women.

The theoretical mechanisms underpinning SUI in young females involve both intrinsic and extrinsic factors, such as urethral sphincter integrity, pelvic floor support, and neuromuscular control (4,14). Activities that increase intra-abdominal pressure can transiently exceed the resistance offered by the urethra, particularly if the support structures are compromised or not yet optimally conditioned. The present study's identification of coughing, laughing, and running as primary triggers underscores the clinical value of targeted interventions such as pelvic floor muscle training for symptomatic individuals. These findings are congruent with recent literature advocating for early education and conservative management, especially in populations with lower parity and fewer comorbidities (3,11,16).

Strengths of this study include its focus on an underexplored demographic—young, educated females—using a robust, validated assessment tool and a clear operational definition of SUI. The cross-sectional design and random sampling approach improve internal validity and provide a reliable snapshot of SUI prevalence and treatment awareness in a university setting. However, several limitations must be acknowledged. The sample size, while sufficient for prevalence estimation, limits the statistical power for detecting smaller differences between subgroups and for complex multivariable analyses. The cross-sectional nature of the study precludes any inference of causality or temporal relationships between physical activity, awareness, and SUI onset. Self-reporting bias and potential underreporting due to social desirability may also have led to an underestimation of true SUI prevalence. Furthermore, the exclusion of individuals with chronic medical conditions, pregnancy, or prior pelvic surgery restricts the generalizability of findings to the broader population of young women (17).

Future research should aim for longitudinal designs that can elucidate the temporal and potentially causal relationships between physical activity patterns, awareness campaigns, and the onset or resolution of SUI in young women. Expanding sample sizes, including more diverse educational and socioeconomic backgrounds, and incorporating objective assessments such as physical examination or urodynamic testing could enhance the external validity and clinical applicability of findings. Additionally, intervention studies evaluating the efficacy of targeted educational programs and pelvic floor training in university populations are warranted. Such efforts would address the ongoing knowledge gaps and potentially reduce the burden of SUI through earlier recognition and self-management. This study highlights the continued relevance of stress urinary incontinence as a health concern among young university females and identifies a persistent gap in awareness and utilization of effective treatment options. The observed association between physical activity and symptom provocation underscores the importance of preventive counseling and tailored management. Addressing these needs through targeted education and evidence-based interventions holds promise for improving both short- and long-term outcomes in this vulnerable population (18-22).

## CONCLUSION

This study identified that stress urinary incontinence affects over one in ten young female university students, yet only 40% were aware of available treatment options, highlighting a significant gap in both symptom burden and health education within this population. The observed association between physical activity intensity and urinary incontinence prevalence, coupled with low treatment awareness among less active individuals, underscores the need for early screening, proactive education, and tailored preventive strategies in academic and clinical settings. These findings emphasize the importance of integrating continence education and accessible interventions into young women's health programs to reduce stigma, encourage timely care-seeking, and improve long-term quality of life. Future research should focus on longitudinal and interventional studies to evaluate the impact of structured awareness campaigns and pelvic floor rehabilitation programs, ultimately guiding more effective, evidence-based practices in the prevention and management of stress urinary incontinence among young females.

**REFERENCES**

1. Nitti VW. The Prevalence of Urinary Incontinence. *Reviews in Urology*. 2001;3:57-62.
2. Fahim F, Fahim WB, Lakhta G, Khan FR. Urinary Incontinence in Pakistani Females: Impact on Quality of Life and Treatment-Seeking Behavior. *Cureus*. 2021;13(7):e16620.
3. Nygaard IE, Heit M. Stress Urinary Incontinence. *Obstetrics and Gynecology*. 2004;104(3):607-20.
4. Stothers L, Friedman B. Risk Factors for the Development of Stress Urinary Incontinence in Females. *Current Urology Reports*. 2011;12:363-9.
5. Danforth KN, Townsend MK, Lifford K, Curhan GC, Resnick NM, Grodstein F. Risk Factors for Urinary Incontinence Among Middle-Aged Females. *American Journal of Obstetrics and Gynecology*. 2006;194(2):339-45.
6. Reynolds WS, Dmochowski RR. Epidemiology of Stress Urinary Incontinence in Females. *Current Urology Reports*. 2011;12(5):370-6.
7. Rogers RG. Urinary Stress Incontinence in Females. *New England Journal of Medicine*. 2008;358(10):1029-36.
8. Chisholm L, Delpé S, Priest T, Reynolds WS. Physical Activity and Stress Incontinence in Females. *Current Bladder Dysfunction Reports*. 2019;14(3):174-9.
9. Hunskaar S, Lose G, Sykes D, Voss S. The Prevalence of Urinary Incontinence in Females in Four European Countries. *BJU International*. 2004;93(3):324-30.
10. Luber KM. The Definition, Prevalence, and Risk Factors for Stress Urinary Incontinence. *Reviews in Urology*. 2004;6(Suppl 3):S3-9.
11. McIntosh L, Andersen E, Reekie M. Conservative Treatment of Stress Urinary Incontinence in Females: A 10-Year (2004-2013) Scoping Review of the Literature. *Urologic Nursing*. 2015;35(4):179-86.
12. Blaivas JG, Olsson CA. Stress Incontinence: Classification and Surgical Approach. *Journal of Urology*. 1988;139(4):727-31.
13. Gari AM, Alharbi AA, Bokhari RF, Abuhaimed A, Alsulami SM, Alsaywid BS, et al. Prevalence of Stress Urinary Incontinence and Risk Factors Among Saudi Females. *Medicina (Kaunas)*. 2023;59(5):940.
14. DeLancey JOL. Why Do Females Have Stress Urinary Incontinence? *Neurourology and Urodynamics*. 2010;29(Suppl 1):S13-7.
15. Kwon BE, Lee SH, Kim G, Kim E, Kim JS. Quality of Life of Females with Urinary Incontinence: A Systematic Literature Review. *Facilities*. 2013;1:7-12.
16. Cervigni M, Gambacciani M. Female Urinary Stress Incontinence. *Climacteric*. 2015;18(Suppl 1):30-6.
17. Pages IH, Gill K, Rea C, Cockburn J. Comparative Analysis of Biofeedback and Physical Therapy for Treatment of Urinary Stress Incontinence in Females. *American Journal of Physical Medicine & Rehabilitation*. 2001;80(7):494-502.
18. Kalejaiye O, Vij M, Drake MJ. Classification of Stress Urinary Incontinence. *World Journal of Urology*. 2015;33(9):1215-20.
19. Markland AD, Goode PS, Redden DT, Borrud LG, Burgio KL, Johnson TM, et al. Prevalence and Trends of Urinary Incontinence in Adults in the United States, 2001 to 2008. *Journal of Urology*. 2011;186(2):589-93.
20. Sensoy N, Dogan N, Ozek B, Karaaslan L, Tekgul N. Urinary Incontinence in Females: Prevalence Rates, Risk Factors and Impact on Quality of Life. *Pakistan Journal of Medical Sciences*. 2013;29(3):818-22.
21. Perera J, Kirthinanda DS, Wijeratne S, Wickramarachchi TK. Prevalence, Perceptions, Predisposing Factors and Health Seeking Behaviour of Females with Stress Urinary Incontinence: A Descriptive Cross-Sectional Study. *BMC Women's Health*. 2014;14:78.
22. Wilkinson K. Pakistani Females' Perceptions and Experiences of Incontinence. *Nursing Standard*. 2001;16(5):33-9.
23. Iwanowicz-Palus GJ, Stadnicka G, Wloszczak-Szubzda A. Medical and Psychosocial Factors Conditioning Development of Stress Urinary Incontinence (SUI). *Annals of Agricultural and Environmental Medicine*. 2013;20(1):135-9.
24. Mantle J, Haslam J, Barton S. *Physiotherapy in Obstetrics and Gynaecology*. 2nd ed. London: Baillière Tindall; 2004.