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Original Article

Unveiling Urinary Incontinence: A Holistic Examination of Demographics, Risk Factors, and Pregnancy-Associated Dynamics

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ABSTRACT

The pervasiveness of urinary incontinence (UI) is very high in pregnant females due to various physiological changes during pregnancy. So, its global burden has increased to 41%. **Objective:** To determine the demographics, physical activity, family history and mode of delivery as possible factors responsible for UI among females during pregnancy. **Methods:** A cross-sectional observational study was conducted for one year in Rural Health Centres Kangra and Kot Najibullah, District Haripur, Khyber Pakhtunkhwa, Pakistan, from Dec 12022 to Nov 30, 2023, involving 311 women aged 25-45 years, examining UI. It encompasses demographic profiles, prevalent risk factors, and nuanced dimensions during pregnancy. The findings delineate the participants' demographic characteristics, showcasing an average middle age with indications of overweight status. **Results:** It highlights the multifaceted nature of UI by associating it with various comorbidities, notably emphasizing the prevalence of high blood pressure and diabetes mellitus. The detailed exploration of UI during pregnancy reveals the predominance of stress-based types and varying severity levels. Moreover, this study offers insights into the impact of pregnancy on UI, illustrating a notable increase post-pregnancy. **Conclusions:** The information related to UI and its associated factors contributes valuable knowledge to healthcare professionals and physicians. They can provide tailored interventions and supportive therapeutic strategies to the individuals affected by UI and its etiological factors.

INTRODUCTION

Urinary incontinence (UI) is a gynaecological disorder which is attributed to the unintentional passing of full urine, or a few drops occasionally. It's a very common prevalent disease affecting millions of males and females as well [1]. Sometimes, this medical state is associated with stress, anxiety, dysfunctional muscles or sphincter of the bladder or due to any comorbidities like hypertension, persistent cough, diabetes mellitus etc. [2]. According to the International Continence Society (ICS), this medical enigma not only affects the physical, and physiological health of individuals but also disturbs the mental state [3]. The pervasiveness of UI is 32-64% in pregnant females due to various physiological changes during pregnancy [4]. The global burden of UI in females during pregnancy has increased by 41%. During the first trimester of pregnancy, the pervasiveness of UI among females is approximately 23%, which increases to 67% till childbirth [5]. The prevalence of UI among Pakistani females is 11%. Stress UI is the most abundant type of UI among pregnant females, being pervasive by 18-75% [6]. The decline in the strength of the pelvic floor muscles (PFM) during pregnancy causes reduced support for pelvic organs and the urethral sphincter, leading to the discharge of urine [7]. In addition, certain hormones like progesterone and relaxin affect the urinary tract's smooth muscles and connective tissues of the pelvis, increasing during pregnancy, which can also

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result in UI [8]. Behavioral therapies, medications, nerve stimulation and surgery are some of the treatments available for managing urinary incontinence. The cough, sneeze, laugh, and heavy weightlifting are the most prevalent causes of stress UI. Furthermore, age, weight gain, constipation, smoking, caffeine consumption, chronic cough, delivery, and obesity are also considered associated risk factors in the incidence of UI [9]. A study conducted in Taiwan found that increased BMI is a significant risk factor for stress UI in pregnant females [10]. PEM exercise and training of synergistic muscles can enhance the strength of PFM on pelvic organs during pregnancy and improve continence, thus indicating a potential treatment for UI. However, it was also reported that intense workouts may contribute to UI incidence [11]. UI significantly impacts the quality of females and their social and economic life. Sadness, nervousness, and aversion to offensive odors due to involuntary discharge significantly affect social life as they avoid gatherings and prefer loneliness. Due to these factors, females often suffer from depression and anxiety that substantially affects their sexual life [12]. Despite the high pervasiveness of UI, females consider UI a normal consequence of aging and pregnancy instead of a medical disease and are often not comfortable talking about incontinence to healthcare professionals [13]. Pregnant females who experience UI could consider that talking to their doctor helps them learn more about the disease and reduce its symptoms by adopting prompt, efficient preventive measures. The study looks into UI's pervasiveness, pathophysiology, and impact on life quality during pregnancy [14]. This information may be immensely helpful in preventing pregnancy-related incontinence and enhancing quality of life.

The objective of the study included that the demographics like age, BMI, caffeine consumption, diabetes, constipation, physical activity, family history of UI, mode of delivery, severity, and perceived cause of UI could be the factors responsible for UI among females during pregnancy. We also hypothesized that UI could cause a considerable negative impact on quality of life.

METHODS

A cross-sectional observational study was conducted for one year in Rural Health Centres Kangra and Kot Najibullah, District Haripur, Khyber Pakhtunkhwa, Pakistan, from Dec 1, 2022 to Nov 30, 2023, involving 311 women aged 25-45 years. All the participants who gave informed consent, having singleton pregnancy and suffering from urinary incontinence were included in this study. Women with chronic or severe cardiovascular disease, kidney disease, liver disease, or other diseases that weaken the immune system of the women were excluded from the study. During this study, the demographic factors for the development of the disease were determined using the self-made questionnaire. UI, along with quality of life, was assessed through the questionnaire. UI was measured and then further analyzed for prevalence, severity, and type [15].The sample size was calculated to be n=170 by using the WHO sample size calculator with 95% confidence interval ,4.14% anticipated population proportion for perinatal death and 3% absolute precision.The sample size was calculated using the statistical formula, and then samples were analyzed. The demographic characteristics of the participants, the type, severity, and need for UI, and quality of life were analyzed in descriptive analysis. Statistical analysis was performed using SPSS version 23.0, considering a p-value less than 0.05 statistically significant.

RESULTS

Table 1 displays the mean values of various demographic variables characterizing the participants in the study. The average age of the cohort participants was 35 to 50 years. The mean height was recorded at 157 cm, and the average weight was 82 kg. These height and weight observations showed that most participants fell within the "Overweight" category, according to the definition of BMI. Additionally, the observation showed that the participants were engaged in an average of 21 minutes of physical activity daily.

Table 1: Mean value of demographic variables of participants

Variables	Mean
Age (years)	35-50
Height (cm)	157
Weight (Kg)	82
Body mass index	Overweight
Physical activity per day	21 min/day

Table 2 presented a comprehensive overview of the prevalence of risk factors associated with UI among the study participants, revealing crucial insights into the relationships between specific health conditions and this urological concern. Notably, a substantial 82.6% of participants have high blood pressure, indicating a strong association between hypertension and UI. Diabetes Mellitus is also prevalent, affecting 44% of participants, emphasizing the significant impact of this metabolic disorder on urinary health. Heart disease, arthritis, dyslipidemia, and constipation are identified in varying percentages, elucidating their roles as potential contributors to UI. The relatively low percentages for heart disease and tumors highlight their less common association with UI in this population. Strikingly, none of the participants reported smoking as a risk factor. Overall, Table 2 underscores the multifaceted nature of UI,

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influenced by a spectrum of comorbidities, and provides a valuable foundation for further research and targeted intervention strategies in managing this prevalent health issue.

Table 2: Risk factors involved in UI with their percentages

Comorbidities	Frequency (%)
High blood pressure	257 (82.6)
Diabetes Mellitus	138 (44)
Heart disease	24 (7)
Arthritis	35 (11)
Dyslipidemia	121 (39)
Constipation	69 (22)
Tumor (any site)	4 (1)
Smoking	0
Hormones level	92 (29.5)

Table 3 presents a detailed exploration of UI during pregnancy, offering valuable insights into its various dimensions among the 311 participants in the study. The classification of UI types reveals a predominant occurrence of stress-based UI affecting 59% of participants, followed by urgency-based UI (12.5%), mixed UI (14.5%), and other types (14%). The severity analysis indicates that a significant majority experience slight (65%) or moderate (31%) UI, with smaller percentages reporting severe (3.5%) or very severe (0.5%) cases. The results showed that mild need of urine discharge suffered in 60% while moderate UI was reported in 18% of the females during pregnancy. These observations provide knowledge about the types and severity of UI in pregnant females. This information helps the gynaecologist and healthcare professional to provide interventional preventive measures to treat the illness.

Table 3: Types, severity and need of UI during pregnancy (n=311)

Comorbidities	Frequency (%)
Types of UI	
Stress based UI	185 (59)
Urgency based UI	37 (12.5)
Mixed UI	45 (14.5)
Others	44 (14)
Severity of UI	
Slight (0-5)	203 (65)
Moderate (6-12)	96 (31)
Severe (13-18)	10 (3.5)
Very severe (19-21)	2 (0.5)
Need of Urine Discharge	
No	68 (21)
Mild	189 (60)
Moderate	49 (18)
Severe	5 (1)

The observations provided in Table 4 show that the risk factors played a critical role in worsening the state of UI during and after the pregnancy. The factors like consumption of coffee were 34%, childhood enuresis (bedwetting) was 27%, while the history of UI was reported in 73% of females. The UI incidence before pregnancy was 29% while after pregnancy it increased up to 58% of the females. These observed variables not only affect the female health but also the quality of life suffered. This information provides valuable insight into understanding the risk factors associated with UI during and after pregnancy, potentially guiding future research and interventional strategies.

Table 4: Risk factors for urinary incontinence before and after pregnancy

Variables	Percentage
Coffee consumption	34
Childhood enuresis	27
History of UTI	73
UI before pregnancy	29
UI after pregnancy	58

DISCUSSION

The observation obtained from the demographic parameters studied in the population of 35-55-year-old females in Rural Health Centres Kangra and Kot Najibullah, District Haripur, Khyber Pakhtunkhwa, Pakistan was aligned with the existing research already published [6, 7]. It showed that the selected age group showed some specific health issues including UI. Previous studies showed that obesity (increased BMI) in females even before or after pregnancy can be the cause of initiating the UI or worsening the acute phase [8-10]. The results also revealed the strong association of UI with high blood pressure, diabetes and dysfunction of pelvic floor muscles. These diseases affect the urinary health of females badly. According to the existing data, the muscles and sphincters of the bladder become weak and sometimes dysfunctional in chronic UI cases and the patient suffers spontaneous discharge of urine even without complete filling of the bladder [15-17]. The current study's findings, focusing on UI during pregnancy, provide valuable insights into the types and severity of UI in this specific context. Stress-based UI being the most prevalent aligns with existing literature, as pregnancy often puts additional stress on the pelvic floor muscles. The distribution of severity levels and perceived needs for intervention provides further context for healthcare professionals dealing with pregnant individuals experiencing UI [18, 19]. The current study investigated risk factors for UI before and after pregnancy, suggesting an exciting shift in prevalence post-pregnancy. The increase in UI after pregnancy is consistent with numerous studies that identify pregnancy and childbirth as significant risk factors for the development or exacerbation of UI [20, 21].

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In summary, these findings align with many existing studies, reinforcing the multifactorial nature of UI and its association with age, certain health conditions, and pregnancy-related factors. While some results may be consistent with prior research, each study contributes unique insights that, when considered collectively, enhance our understanding of the complex interplay of factors influencing UI. Future studies may build on these findings to refine interventions and develop targeted strategies for different populations.These findings collectively contribute to a comprehensive understanding of UI, providing valuable insights for healthcare professionals and researchers to tailor interventions and support strategies based on demographics, risk factors, and pregnancy-related considerations.

CONCLUSIONS

The observations collected from the conducted cross-sectional study showed that High BMI (overweight) and co-morbidities like hypertension and diabetes may cause UI in females. These factors may initiate the UI or worsen the severity and urge of UI before and after the pregnancy. This information related to UI and its associated factors contributes valuable knowledge to healthcare professionals and physicians. They can provide tailored interventions and supportive therapeutic strategies to the individuals affected by UI and its etiological factors.

Authors Contribution

Conceptualization: AI
Methodology: IB, AI
Formal analysis: IB, AI, FJ
Writing-review and editing: AI, FJ

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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REFERENCES

[1] Abrar S, Mohsin R, Samad A. Female Urinary Incontinence: Frequency, Risk Factors, and Impact on the Quality of Life of Pregnant Pakistani Women. Pakistan Journal of Medical Sciences. 2023 May; 39(3): 667. doi: 10.12669/pjms.39.3.6313.

[2] Balik G, Güven ES, Tekin YB, Şentürk Ş, Kağitci M, Üstüner I *et al.* Lower urinary tract symptoms and urinary incontinence during pregnancy. LUTS: Lower Urinary Tract Symptoms. 2016 May; 8(2): 120-4. doi: 10.1111/luts.12082.

[3] Bekele A, Adefris M, Demeke S. Urinary incontinence among pregnant women, following antenatal care at University of Gondar Hospital, North West Ethiopia. BMC Pregnancy and Childbirth. 2016 Dec; 16: 1-6. doi: 10.1186/s12884-016-1126-2.

[4] Chang SR, Lin WA, Chang TC, Lin HH, Lee CN, Lin MI. Risk factors for stress and urge urinary incontinence during pregnancy and the first year postpartum: a prospective longitudinal study. International Urogynecology Journal. 2021 Sep; 32: 2455-64. doi: 10.1007/s00192-021-04788-w.

[5] Dağdeviren H, Kaya C, Cengiz H, Erdoğan VŞ, Helvacıoğlu Ç, Bilecan MS. Urinary incontinence in pregnant women and its relation with quality of life. Age. 2018; 18(50): 28. doi: 10.5152/imj.2018.45722.

[6] Falah-Hassani K, Reeves J, Shiri R, Hickling D, McLean L. The pathophysiology of stress urinary incontinence: a systematic review and meta-analysis. International Urogynecology Journal. 2021 Mar; 32: 501-52. doi: 10.1007/s00192-020-04622-9.

[7] Kok G, Seven M, Guvenc G, Akyuz A. Urinary incontinence in pregnant women. Journal of Wound, Ostomy and Continence Nursing. 2016 Sep; 43(5): 511-6. doi: 10.1097/WON.0000000000000262.

[8] Mazur-Bialy AI, Kołomańska-Bogucka D, Nowakowski C, Tim S. Urinary incontinence in women: modern methods of physiotherapy as a support for surgical treatment or independent therapy. Journal of Clinical Medicine. 2020 Apr; 9(4): 1211. doi: 10.3390/jcm9041211.

[9] Cuadras D and Parés D. Hormonal Influence in Stress Urinary Incontinence During Pregnancy and Postpartum. Reproductive Sciences. 2022 Apr. doi: 10.1007/s43032-022-00946-7.

[10] Moossdorff-Steinhauser HF, Berghmans BC, Spaanderman ME, Bols EM. Prevalence, incidence and bothersomeness of urinary incontinence in pregnancy: a systematic review and meta-analysis. International Urogynecology Journal. 2021 Jul: 1-20. doi: 10.1007/s00192-021-04877-w.

[11] Nigam A, Ahmad A, Gaur D, Elahi AA, Batra S. Prevalence and risk factors for urinary incontinence in pregnant women during late third trimester. Int J Reprod Contracept Obstet Gynecol. 2016 Jul; 5(7): 2187-91. doi: 10.18203/2320-1770.ijrcog20162090.

[12] Okunola TO, Olubiyi OA, Omoya S, Rosiji B, Ajenifuja KO. Prevalence and risk factors for urinary incontinence in pregnancy in Ikere-Ekiti, Nigeria. Neurourology and Urodynamics. 2018 Nov; 37(8): 2710-6. doi: 10.1002/nau.23726.

DOI: https://doi.org/10.54393/pjhs.v5i02.1298

[13] Ptak M, Ciećwież S, Brodowska A, Starczewski A, Nawrocka-Rutkowska J, Diaz-Mohedo E *et al.* The effect of pelvic floor muscles exercise on quality of life in women with stress urinary incontinence and its relationship with vaginal deliveries: a randomized trial. BioMed Research International. 2019 Jan; 2019. doi: 10.1155/2019/5321864.

[14] Rajavuori A, Repo JP, Häkkinen A, Palonen P, Multanen J, Aukee P. Maternal risk factors of urinary incontinence during pregnancy and postpartum: A prospective cohort study. European Journal of Obstetrics & Gynecology and Reproductive Biology: X. 2022 Jan; 13: 100138. doi: 10.1016/j.eurox.2021.100138.

[15] Sangsawang B. Risk factors for the development of stress urinary incontinence during pregnancy in primigravidae: a review of the literature. European Journal of Obstetrics & Gynecology and Reproductive Biology. 2014 Jul; 178: 27-34. doi: 10.1016/j.ejogrb.2014.04.010.

[16] Teixeira RV, Colla C, Sbruzzi G, Mallmann A, Paiva LL. Prevalence of urinary incontinence in female athletes: a systematic review with meta-analysis. International Urogynecology Journal. 2018 Dec; 29: 1717-25. doi: 10.1007/s00192-018-3651-1.

[17] Yusoff DM, Awang S, Kueh YC. Urinary incontinence among pregnant women attending an antenatal clinic at a tertiary teaching hospital in North-East Malaysia. Journal of Taibah University Medical Sciences. 2019 Feb; 14(1): 39-46. doi: 10.1016/j.jtumed.2018.11.009.

[18] Vesentini G, Barbosa AM, Floriano JF, Felisbino SL, Costa SM, Piculo F *et al.* Deleterious effects of gestational diabetes mellitus on the characteristics of the rectus abdominis muscle associated with pregnancy-specific urinary incontinence. Diabetes Research and Clinical Practice. 2020 Aug; 166: 108315. doi: 10.1016/j.diabres.2020.108315.

[19] Canibaño B, Deleu D, Mesraoua B, Melikyan G, Ibrahim F, Hanssens Y. Pregnancy-related issues in women with multiple sclerosis: an evidence-based review with practical recommendations. Journal of Drug Assessment. 2020 Jan; 9(1): 20-36. doi: 10.1080/21556660.2020.1721507.

[20] Schmid S, Imthurn B, Feki A, Mathis J, de Tejada BM, von Wolff M *et al.* Société Suisse de Gynécologie et d'Obstétrique (SGGG) Congress. Gynecologic and Obstetric Investigation. 2023; 88(1): 1-99. doi: 10.1159/000531140.

[21] Oats JJ, Boyle J,Llewellyn-Jones. Fundamentals of Obstetrics and Gynaecology. 16th edition. Scotland: Elsevier Health Sciences; 2022.