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Frequency of Urinary Tract Infection Among Patients with Utero-Vaginal Prolapse

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ABSTRACT

Background: Utero-vaginal prolapse is a frequent pelvic floor disorder in women especially in middle and older age groups. The condition can disturb normal bladder position and urine flow which may increase the risk of urinary tract infection. Local data regarding this problem is limited particularly from Swat region. **Objective:** To determine the frequency of urinary tract infection among patients with utero-vaginal prolapse. **Study Design:** Cross sectional study. **Duration and Place of Study:** This study was carried out from 1st September 2024 to 1st March 2025 in the Department of Obstetrics and Gynecology Saidu Group of Teaching Hospital Swat. **Methodology:** A total of 178 women aged 18 to 60 years diagnosed with utero-vaginal prolapse were included. Urinary tract infection was defined by fever above 38°C along with pyuria and positive culture. Data were analyzed using Statistical Package for Social Sciences version 25. Chi square test and Fisher exact test were applied, with $p \leq 0.05$ considered significant. **Results:** The mean age was 46.82 ± 6.85 years. Urinary tract infection was found in 27 patients, giving a frequency of 15.20%. No statistically significant association was observed between urinary tract infection and age, body mass index, duration of symptoms, comorbidities, residence or degree of prolapse ($p > 0.05$). **Conclusion:** Urinary tract infection is a common complication among patients with utero-vaginal prolapse.

INTRODUCTION

Utero-vaginal prolapse is a common pelvic floor problem where the uterus and the vaginal walls descend down from their normal position because the support tissues become weak.[1] It mostly happen in adult and older women and it can cause feeling of heaviness in pelvis a bulge coming out from vagina and discomfort during walking or sitting.[2] Some patients also complain of low back pain and sexual difficulty and problems in passing urine or stool.[3] On examination cervix or uterus may be seen at vaginal opening or outside it and the vaginal walls can also be prolapsed. This condition can affect daily life and hygiene and many women feel embarrassment so they come late for care which make symptoms more worse.[4]

Many factors can lead to utero-vaginal prolapse and they are usually related to damage or weakness of pelvic floor muscles and ligaments. Multiple vaginal deliveries and prolonged labor and home delivery and big baby and birth trauma can stretch the pelvic support and later it fails to hold uterus properly.[5,6] Increasing age and menopause reduce estrogen so tissues become thin and less strong and this make prolapse more likely.[7] Chronic increased abdominal pressure like constipation and chronic cough and heavy lifting and obesity also push down pelvic organs again and again.[8] Poor nutrition and anemia and connective tissue weakness can also contribute and history of pelvic surgery may change support. Low socioeconomic status and limited access to obstetric care can be indirect factors too because injuries remain untreated for long time.[9]

Urinary tract infection among patients with utero-vaginal prolapse is seen more often because prolapse can disturb normal urine flow and bladder emptying.[10] When the bladder neck is displaced or there is cystocele the patient may not empty bladder fully and residual urine stays and this stagnant urine become good place for bacteria growth.[11] Some women have urinary symptoms like frequency and urgency and burning and dysuria and sometimes fever but in older patients it may present with vague lower abdominal discomfort only.[12] Prolapse also make personal hygiene difficult and can cause mucosal ulceration or discharge which may increase chance of ascending infection.[13] Recurrent UTI can happen and it can worsen quality of life and in severe cases it can lead to pyelonephritis. Assessment should include urine analysis and culture when possible and treatment usually need antibiotics with advice on hydration and proper genital hygiene while correcting prolapse by pessary or surgery

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can help reduce repeated infections.[14] In a study of patients with pelvic organ prolapse, urinary tract infection was identified in 21.0% of the enrolled participants.[15]
Utero-vaginal prolapse is common problem among women in Swat due to early marriages, multiple deliveries, heavy physical work and poor health facilities. Urinary tract infection is frequently seen in patients with utero-vaginal prolapse but local data from Swat region is very limited. Due to lack of awareness and delayed hospital visit, many patients remain untreated and develop complications. Therefore, this study is needed to determine frequency of urinary tract infection among patients with utero-vaginal prolapse in Swat so that better prevention and management strategies can be planned.

METHODOLOGY

This cross-sectional study was carried out in the Department of Obs and Gynae at Saidu Group of Teaching Hospital Swat during the period from 1st September 2024 to 1st March 2025. Approval was obtained from the research review board and ethical committee of the institution before initiation of the study (No: 31-ERB/024, Dated 12-03-2024) . All procedures were performed in accordance with institutional ethical standards. The sample size was calculated using WHO sample size calculator by taking anticipated frequency of urinary tract infection in utero-vaginal prolapse patients as 21.0%,[15] margin of error as 6%, and confidence level as 95%. The calculated sample size was 178 patients. Patients aged between 18 and 60 years who were diagnosed with utero-vaginal prolapse were included in the study. Patients were excluded if they had used antibiotics within last 15 days and had interstitial nephritis and were using hormone replacement therapy or immunosuppressive therapy, had indwelling urinary catheter or ureteral stent or had urinary tract abnormality, urinary obstruction, neurogenic bladder, multiple sclerosis or other neurological bladder disorders. After completion of clinical evaluation and laboratory testing, utero-vaginal prolapse was considered present when descent of uterus was observed clinically from its normal anatomical position. First degree prolapse was taken as descent of cervix into vagina, second degree as descent of cervix up to introitus, third degree as cervix lying outside the introitus, and fourth degree as complete uterus lying outside the introitus.
Written informed consent was taken from all patients prior to data collection after explaining the purpose, possible benefits of the study. Participation was kept voluntary and confidentiality was maintained. Baseline demographic data were recorded including age, body mass index in kg/m^2, residence and socio-economic status. A detailed clinical history was taken from all patients regarding duration of complaints, comorbidities such as diabetes mellitus, hypertension and coronary artery disease along with obstetrical history including parity and mode of delivery. Previous gynecological problems were also inquired. Clinical examination was performed including general physical examination and pelvic examination to assess the degree of prolapse. For assessment of urinary tract infection, a 10 ml mid-stream urine sample was collected in an air-tight sterile container from each patient. The sample was sent to the hospital laboratory within 1 hour of collection for urinalysis and culture. All laboratory investigations were performed by a senior pathologist who was blinded to the clinical findings. Findings were recorded by the researcher herself. Urinary tract infection was considered present when patient had fever with core body temperature more than 38° C recorded on thermometer along with urine showing more than 10 white cells and bacterial growth on culture.
Data were entered and analyzed using IBM SPSS version 25. Quantitative variables such as age, body mass index and duration of complaints were expressed as mean ± standard deviation. Qualitative variables including parity, residence, socio-economic status, degree of prolapse and presence of urinary tract infection were expressed as frequencies and percentages. Presence of urinary tract infection was stratified with respect to age, body mass index, duration of complaints and comorbidities. Post-stratification chi square test or Fisher exact test was applied at significance level of 5%. A p value ≤0.05 was considered statistically significant.

RESULTS

The mean age of patients was 46.82 ± 6.85 years with mean duration of symptoms being 6.92 ± 2.46 weeks. The average body mass index was recorded as 23.46 ± 0.88 kg/m^2. Regarding comorbid conditions, hypertension was present in 82 patients (46.1%) while 96 patients (53.9%) had no hypertension. Diabetes mellitus was found in 74 patients (41.6%) and absent in 104 patients (58.4%). Coronary artery disease was observed in 21 patients (11.8%) whereas 157 patients (88.2%) did not have this condition. Majority of patients was from rural areas comprising 123 patients (69.1%) while 55 patients (30.9%) was from urban areas. Regarding degree of prolapse, first degree was seen in 22 patients (12.4%), second degree in 59 patients (33.1%), third degree in 78 patients (43.8%), and fourth degree in 19 patients (10.7%) as shown in Table 1.

Table 1
Patient Demographics

Demographics		Mean ± SD / n (%)
Age (years)		46.82 ± 6.85
Duration (weeks)		6.92 ± 2.46
BMI (kg/m^2)		23.46 ± 0.88
Hypertension	Yes n (%)	82 (46.1%)
	No n (%)	96 (53.9%)
Diabetes Mellitus	Yes n (%)	74 (41.6%)
	No n (%)	104 (58.4%)
Coronary Artery Disease	Yes n (%)	21 (11.8%)
	No n (%)	157 (88.2%)
Residence	Rural n (%)	123 (69.1%)
	Urban n (%)	55 (30.9%)
Degree of Prolapse	First n (%)	22 (12.4%)
	Second n (%)	59 (33.1%)
	Third n (%)	78 (43.8%)
	Fourth n (%)	19 (10.7%)

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The frequency of urinary tract infection among patients with utero-vaginal prolapse was demonstrated in Table-II. Out of total 178 patients, urinary tract infection was present in 27 patients (15.20%) while 151 patients (84.80%) did not have urinary tract infection as shown in Table 2.

Table 2

Frequency of Urinary Tract Infection Among Patients with Utero-Vaginal Prolapse

Urinary Tract Infection	Frequency	%age
Yes	27	15.20%
No	151	84.80%
Total	178	100%

For age stratification, patients aged ≤40 years showed urinary tract infection in 7 patients (22.6%) compared to 24 patients (77.4%) without infection, while in patients >40 years, infection was present in 20 patients (13.6%) versus 127 patients (86.4%) without infection, with p-value of 0.206 showing no significant association. Duration of symptoms ≤4 weeks showed infection in 4 patients (12.5%) and no infection in 28 patients (87.5%), whereas duration >4 weeks had infection in 23 patients (15.8%) and no infection in 123 patients (84.2%), with p-value of 0.789 indicating non-significant association. For BMI stratification, patients with BMI ≤25 kg/m^2 had infection in 27 patients (16.4%) and no infection in 138 patients (83.6%), while patients with BMI >25 kg/m^2 had no infection cases with 0 patients (0.0%) having infection and 13 patients (100.0%) having no infection, with p-value of 0.222. Hypertensive patients showed infection in 12 patients (14.6%) compared to 70 patients (85.4%) without infection, while non-hypertensive patients had infection in 15 patients (15.6%) versus 81 patients (84.4%) without infection, with p-value of 0.854. Diabetic patients demonstrated infection in 15 patients (20.3%) and no infection in 59 patients (79.7%), whereas non-diabetic patients had infection in 12 patients (11.5%) and no infection in 92 patients (88.5%), with p-value of 0.109. Patients with coronary artery disease had infection in 2 patients (9.5%) compared to 19 patients (90.5%) without infection, while patients without coronary artery disease showed infection in 25 patients (15.9%) versus 132 patients (84.1%) without infection, with p-value of 0.540. Rural patients had infection in 18 patients (14.6%) and no infection in 105 patients (85.4%), while urban patients showed infection in 9 patients (16.4%) versus 46 patients (83.6%) without infection, with p-value of 0.766. Regarding degree of prolapse, first degree showed infection in 5 patients (22.7%) and no infection in 17 patients (77.3%), second degree had infection in 12 patients (20.3%) versus 47 patients (79.7%) without infection, third degree showed infection in 9 patients (11.5%) compared to 69 patients (88.5%) without infection, and fourth degree had infection in only 1 patient (5.3%) versus 18 patients (94.7%) without infection, with p-value of 0.223. None of the demographic and clinical factors showed statistically significant association with urinary tract infection as all p-values was greater than 0.05 as shown in Table 3.

Table 3

Association of Urinary Tract Infection with Demographic and Clinical Factors

Demographic Factors		Urinary Tract Infection		p-value
		Yes n(%)	No n(%)	
Age (years)	≤40	7 (22.6%)	24 (77.4%)	0.206
	>40	20 (13.6%)	127 (86.4%)	
Duration (weeks)	≤4	4 (12.5%)	28 (87.5%)	0.789*
	>4	23 (15.8%)	123 (84.2%)	
BMI (Kg/m^2)	≤25	27 (16.4%)	138 (83.6%)	0.222*
	>25	0 (0.0%)	13 (100.0%)	
Hypertension	Yes	12 (14.6%)	70 (85.4%)	0.854
	No	15 (15.6%)	81 (84.4%)	
Diabetes Mellitus	Yes	15 (20.3%)	59 (79.7%)	0.109
	No	12 (11.5%)	92 (88.5%)	
Coronary Artery Disease	Yes	2 (9.5%)	19 (90.5%)	0.540*
	No	25 (15.9%)	132 (84.1%)	
Residence	Rural	18 (14.6%)	105 (85.4%)	0.766
	Urban	9 (16.4%)	46 (83.6%)	
Degree of Prolapse	First	5 (22.7%)	17 (77.3%)	0.223*
	Second	12 (20.3%)	47 (79.7%)	
	Third	9 (11.5%)	69 (88.5%)	
	Fourth	1 (5.3%)	18 (94.7%)	

*Fischer Exact Test

DISCUSSION

In current study the frequency of urinary tract infection was found to be 15.20% (n=27) which indicate that approximately one in six patients with prolapse suffer from this complication. This finding can be explained by the fact that prolapse causes anatomical distortion of urinary tract and incomplete bladder emptying which creates favorable environment for bacterial colonization and growth. The stagnant urine in bladder acts as culture medium for pathogenic organisms leading to infection. The mean age of patients was 46.82 ± 6.85 years which reflects that utero-vaginal prolapse predominantly affects middle-aged and perimenopausal women. This age distribution occurs because of hormonal changes and estrogen deficiency during perimenopausal period which weakens pelvic floor muscles and supporting ligaments. Additionally, the cumulative effect of multiple vaginal deliveries and chronic increased intra-abdominal pressure over years contributes to development of prolapse in this age group. Third degree prolapse was most common finding present in 78 patients (43.8%) followed by second degree in 59 patients (33.1%). This distribution suggests that most patients presents with advanced stage of disease which occurs because prolapse is progressive condition and patients often delays seeking treatment due to social stigma and embarrassment. The anatomical descent in advanced prolapse creates more mechanical obstruction and urinary stasis which potentially increases risk of infection. Diabetes mellitus was present in 74 patients (41.6%) and showed higher frequency of urinary tract infection 15 (20.3%) compared to non-diabetic patients 12 (11.5%) although this difference was not statistically significant (p=0.109). The increased infection rate in diabetic patients occurs because hyperglycemia impairs neutrophil function and reduces cellular immunity making patients more susceptible to infections. High glucose levels in urine also provides nutrient-rich environment for bacterial proliferation.

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The frequency of urinary tract infection in present study was 15.20% (n=27) which shows similarity with several previous studies. Wanichsetakul P *et al.* reported UTI incidence of 17.6% in postmenopausal women with pelvic organ prolapse [16] while Khan S *et al.* found prevalence of 15.7% in postmenopausal women.[17] These comparable findings suggest that prolapse creates consistent anatomical and functional changes in urinary tract regardless of geographical location which predisposes patients to infection through similar mechanisms of urinary stasis and incomplete bladder emptying. However, Fakhrudin E *et al.* reported slightly lower frequency of 14% in post-operative prolapse patients [18] and Eleje GU *et al.* found UTI as complication in 13.5% of prolapse cases in low resource setting.[19] The minor variations in infection rates can be attributed to differences in study populations, diagnostic criteria used for UTI, and healthcare seeking behaviors in different settings. The mean age of patients in current study was 46.82 ± 6.85 years which differs from other studies where mean age was considerably higher. Eleje GU *et al.* reported mean age of 55.5 years in their prolapse patients[19] and Khan S *et al.* studied postmenopausal women with mean age expected to be above 50 years.[17] This age difference occurs because present study included perimenopausal and younger women with prolapse while other studies focused specifically on postmenopausal population. The younger age in current study may reflects earlier presentation of symptoms or different demographic patterns in local population where early marriages and multiparity causes prolapse at younger ages. Rural predominance was found in present study with 123 patients (69.1%) from rural areas compared to 55 patients (30.9%) from urban areas. This finding aligns with Khan S *et al.* who studied both rural and urban postmenopausal women and found higher burden in rural areas.[17] The rural predominance occurs because of higher parity rates, heavy physical labor, poor access to healthcare, and delayed treatment seeking in rural populations. However, Eleje GU *et al.* study from Nigeria also emphasized low resource settings where similar patterns of late presentation was observed.[19]

Third degree prolapse was most common in present study affecting 78 patients (43.8%) followed by second degree in 59 patients (33.1%). Wanichsetakul P *et al.* specifically noted significant correlation between procidentia uteri and UTI (p = 0.001) [16] which supports the concept that advanced prolapse stages increases infection risk due to greater anatomical distortion and urinary retention. Krishna UR *et al.* found that more than 50% of patients with long-standing prolapse had structural or functional urinary tract changes and 20% had positive urine culture.[20] These findings suggest that progressive nature of prolapse and delayed presentation leads to more severe stages which creates favorable conditions for UTI development through increased post-void residual urine and mechanical obstruction. Diabetes mellitus was present in 41.6% (n=74) of patients in current study with higher UTI frequency in diabetics 15 (20.3%) compared to non-diabetics 12 (11.5%) although difference was not statistically significant (p=0.109). Khan S *et al.* found significant association between chronic diseases including diabetes mellitus and UTI in postmenopausal women.[17] The increased susceptibility of diabetic patients to UTI occurs through impaired immune function and glucosuria which promotes bacterial growth. The non-significant association in present study may be due to smaller sample size or different distribution of diabetes control among patients. No statistically significant associations were found between UTI and demographic factors including age (p=0.206), hypertension (p=0.854), residence (p=0.766), and degree of prolapse (p=0.223) in present study. However, Zhu X *et al.* used Mendelian randomization approach and found potential causal link between uterine prolapse and increased risk of UTI (p=0.048) [21] which suggests that prolapse itself may be risk factor for infection. The lack of significant associations in present study could be explained by limited sample size, cross-sectional design, or confounding variables that was not controlled. Eleje GU *et al.* identified menopause, advanced age, and multiparity as significant determinants of prolapse[19] but these factors may not directly correlate with UTI development in all populations due to variations in individual risk profiles and protective factors.

The present study had several limitations which should be acknowledged. First, this was single center study conducted at one hospital which may limits the generalizability of findings to broader population. The sample size was relatively small with only 178 patients which may have affected the statistical power to detect significant associations between various risk factors and urinary tract infection. The cross-sectional design of study did not allow for establishment of temporal relationships or causality between prolapse and UTI development. Additionally, the study did not include long-term follow-up data to assess recurrence rates of infections or progressions of prolapse over time.

CONCLUSION

The present study has concluded that urinary tract infection is a common complication among patient with utero-vaginal prolapse affecting significant proportion of cases. The study demonstrates that prolapse-related anatomical change and urinary stasis contributes to development of infection in these patient.

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Ethical Permission

This research was allowed by the Ethics Committee. All procedures were followed as per committee instructions and also according to Helsinki rules.

Patient Permission

Every patient signed a consent form before joining the research. They were informed that their data will be kept secret and they were free to quit the study at any time.

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REFERENCES

1. Yosef H, Alemu T, Mengesha MW, Adule A. Risk factors for uterovaginal prolapse among women in public hospitals of Sidama, Ethiopia: a case control study. *Front Reprod Health*. 2025;7:1569449. https://doi.org/10.3389/frph.2025.1569449
2. Carroll L, O'Sullivan C, Doody C, Perrotta C, Fullen B. Pelvic organ prolapse: the lived experience. *PLoS One*. 2022;17(11):e0276788. https://doi.org/10.1371/journal.pone.0276788
3. Kalata U, Pomian A, Jarkiewicz M, Kondratskyi V, Lippki K, Barcz E. Influence of stress urinary incontinence and pelvic organ prolapse on depression, anxiety, and insomnia: a comparative observational study. *J Clin Med*. 2023;13(1):185. https://doi.org/10.3390/jcm13010185
4. Rus A, Manea A, Cora A, Szabó B, Hălmaciu I. A rare case of severe pelvic organ prolapse with massive perineal hernia in a nulliparous woman: a case report and literature review. *Diagnostics (Basel)*. 2025;15(19):2481. https://doi.org/10.3390/diagnostics15192481
5. Wang C, Wang Q, Zhao X, Wang X, Zhou W, Kang L. Effects of different delivery modes on pelvic floor function in parturients 6–8 weeks after delivery using transperineal four-dimensional ultrasound. *Dis Markers*. 2022;2022:2334335. https://doi.org/10.1155/2022/2334335
6. Barasinski C, Debost-Legrand A, Savary D, Bouchet P, Curinier S, Vendittelli F. Does the type of pushing at delivery influence pelvic floor function at 2 months postpartum? a pragmatic randomized trial: the EOLE study. *Acta Obstet Gynecol Scand*. 2023;102(1):67-75. https://doi.org/10.1111/aogs.14461
7. Arnautu AM, Nimigean VR, Nacea-Radu CA, Tilici DM, Paun DL. Menopausal hormone therapy: risks, benefits and emerging options: a narrative review. *Int J Mol Sci*. 2025;26(22):11098. https://doi.org/10.3390/ijms262211098
8. Obsa MS, Worji TA, Kedir NA, Kute NG. Risk factors of pelvic organ prolapse at Asella Teaching and Referral Hospital: unmatched case control study. *Front Glob Womens Health*. 2022;3:833823. https://doi.org/10.3389/fgwh.2022.833823
9. Ruder B, Emasu A. The promise and neglect of follow-up care in obstetric fistula treatment in Uganda. In: Wallace LJ, MacDonald ME, Storeng KT, editors. *Anthropologies of global maternal and reproductive health: from policy spaces to sites of practice*. Cham (CH): Springer; 2022. p. 49-64. https://doi.org/10.1007/978-3-030-84514-8_3
10. Munno GM, La Verde M, Lettieri D, Nicoletti R, Nunziata M, Fasulo DD, *et al.* Pelvic organ prolapse syndrome and lower urinary tract symptom update: what's new? *Healthcare (Basel)*. 2023;11(10):1513. https://doi.org/10.3390/healthcare11101513
11. Hamid R, Losco G. Pelvic organ prolapse-associated cystitis. *Curr Bladder Dysfunct Rep*. 2014;9(3):175-180. https://doi.org/10.1007/s11884-014-0249-4
12. Storme O, Tirán Saucedo J, Garcia-Mora A, Dehesa-Dávila M, Naber KG. Risk factors and predisposing conditions for urinary tract infection. *Ther Adv Urol*. 2019;11:1756287218814382. https://doi.org/10.1177/1756287218814382
13. Baimakhanova B, Sadanov A, Trenozhnikova L, Balgimbaeva A, Baimakhanova G, Orasymbet S, *et al.* Understanding the burden and management of urinary tract infections in women. *Diseases*. 2025;13(2):59. https://doi.org/10.3390/diseases13020059
14. Dawson ML, Cramer MS, Thompson DR, Vakili B. Microbiological analysis of urine cultures in women after pelvic reconstructive surgery. *Curr Urol*. 2018;11(4):212-217. https://doi.org/10.1159/000447221
15. Töz E, Kurt S, Sahin Ç, Canda MT. Frequency of recurrent urinary tract infection in patients with pelvic organ prolapse. *Res Rep Urol*. 2015;7:9-12. https://doi.org/10.2147/rru.s77061
16. Wanichsetakul P, Lekskulchai O, Mairiang K. A study of the relationship between pelvic organ prolapse and positive dipstick urinalysis in postmenopausal women. *J Med Assoc Thai*. 2016;99(Suppl.4):S275-S280.
17. Khan S, Ansari MA, Vasenwala SM, Mohsin Z. Urinary tract infection and associated risk factors in post-menopausal women. *Int J Curr Microbiol App Sci*. 2015;Special Issue-1:230-235.
18. Fakhrudin E, Fauzi A, Effendy K, Theodorus T. The risk of urinary tract infection in post-operative pelvic organ prolapse is increasing in patients with shorter urethral-anal distance. *Indones J Obstet Gynecol*. 2013;1-3:152-155. https://doi.org/10.32771/inajog.v1i3.356
19. Eleje GU, Udegbunam OI, Ofojebe CJ, Adichie CV. Determinants and management outcomes of pelvic organ prolapse in a low resource setting. *Ann Med Health Sci Res*. 2014;4(5):796-801. https://doi.org/10.4103/2141-9248.141578
20. Krishna UR, Iyer L. Hydroureters and hydronephrosis in longstanding uterovaginal prolapse. *J Obstet Gynaecol India*. 1993;43(6):576-579.
21. Zhu X, Hu C, Hu A, *et al.* Investigating causal links between uterine prolapse, urinary tract infections, and lower urinary tract symptoms: a two-sample Mendelian randomization study. *Int J Womens Health*. 2025;17:2947-2957. https://doi.org/10.2147/IJWH.S530763

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