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Urinary Incontinence among Women in a Resource-Poor Setting: A Study of Urinary Behaviours and Other Predisposing Factors

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Abstract

Background: Urinary incontinence is a common but poorly reported condition among women, especially in low/middle-income countries. We assess the behavioral and sociodemographic factors associated with urinary incontinence among women in Ilesha, Nigeria. **Methods:** This cross-sectional study was conducted from February 2024 to March 2025. A convenient sampling technique was used in recruiting 270 participants. Data were obtained by a facilitated, interviewer-administered questionnaire to collect information from 270 women attending the General Outpatients Department at Wesley Guild Hospital in Ilesha, Nigeria. The data were analysed with version 27 of the International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS). The threshold for statistical significance was established at 5% (0.05). Data were examined using descriptive statistics and Chi-square testing. **Results:** The prevalence of urinary incontinence was 152 (56.3%), with Mixed Urinary Incontinence being the most prevalent, 75 (49.0%). The mean age in this study was 33.7 ± 3.6 years. More than two-thirds of the respondents, 193 (71.5%), were multiparous. Majority of respondents, 165 (61.2%), exhibited bad urinary behaviours, while 105 (38.8%) women demonstrated good urinary behaviours. Predisposing factors associated with urinary incontinence were older age group (P = 0.044), high parity (P = 0.001), and Bad Urinary behaviour (P = 0.003). **Conclusion:** The study indicated that more than half of the participants suffered urine incontinence, and a correlation was shown between their urinary behaviours and the incidence of urinary incontinence. Enhancing knowledge of the significance of good urine practices among women in Nigeria will mitigate the issue of urinary incontinence.

Keywords

Urinary Incontinence, Toilet Behavior, Women

1. Introduction

One vital part of the human body is the urinary system. Maintaining a person's overall health depends on this system operating properly. Urinary incontinence (UI) is a common but underreported disorder that has a major impact on women's everyday functioning, psychosocial well-being, and quality of life all over the world [1]. Urinary behaviours, which are linked to both the storing and voiding of urine, are crucial to the effective functioning of this system. Urinary behavior encompasses all the actions and patterns related to how individuals void, including when, where, and how they urinate. It involves both voluntary actions, such as choosing a place and time to urinate, and involuntary aspects, including bladder sensations and the micturition reflex. Urinary incontinence, which is the involuntary loss of urine, has been linked to lower quality of life in persons who experience it, making it a significant health concern [2]. Women are more likely to change their usual urinary behaviors in response to environmental conditions, such as unfamiliar locations or inadequate toilet infrastructure, compared to men [2]. The condition is associated with a range of physiological, anatomical, and behavioral factors, including age, parity, obesity, menopause, pelvic floor dysfunction, and obstetric trauma. However, emerging evidence suggests that modifiable behavioral factors particularly urinary or toileting behaviors play a critical role in the development and persistence of lower urinary tract symptoms (LUTS), including UI. These behaviors encompass a wide range of practices such as delayed voiding, premature voiding, straining during micturition, avoidance of public restrooms, and non-optimal voiding positions, all of which may contribute to bladder dysfunction over time [3] [4].

The four main categories of UI are stress, urge, mixed, and overflow. Stress urinary incontinence is "the involuntary loss of urine in response to physical exertion, such as sneezing or coughing". Urge urinary incontinence is the involuntary loss of urine that occurs during or shortly before an episode of urgency (a strong, sudden need to urinate that can't be put off for long). The involuntary loss of urine due to urgency and physical activity (sneezing, coughing, etc.) is known as "mixed urinary incontinence". The symptoms of an overactive bladder include urgency, frequency, and nighttime urination, with or without urine incontinence [1]-[3].

Women are especially likely to experience stress and mixed incontinence. Still, little attention has been drawn to risk factors such as urinary behaviors as a likely predisposing factor. In a study conducted by Stuart *et al.* (2020), it was noted that many women avoid using public restrooms due to issues centered on the availability of amenities, the cleanliness of these amenities, and the lack of privacy [2].

Many of them then start using the loo in an unhealthy way, which leads to the development of lower urinary tract problems including incontinence. Contrary to the various urinary behaviors taught in several parts of the world, women, in particular, have been observed to adopt new ones, such as delaying or ignoring the urge to void, due to several physical and socio-cultural environmental factors, which later result in the adaptation of new behaviors becoming a habit in them [5]. Convenience voiding has been adopted by several women as a compensatory method to prevent episodes of urinary incontinence [2].

Premature voiding is one urine behaviour that has been linked to urinary incontinence in earlier research. Evidences show that women who reduce the use of the restroom while at work are more likely to develop lower urinary tract symptoms, such as urinary incontinence, among others. Newman *et al.* also stated that the use of other positions by women apart from the sitting position, due to poor restroom sanitation, has been equally associated with incontinence [3].

In resource-poor settings, infrastructural deficits such as inadequate sanitation, lack of clean and private public toilets, and sociocultural norms around modesty and hygiene often compel women to adopt maladaptive voiding habits. These environmental constraints are compounded by limited access to health education and preventive care.

In sub-Saharan Africa, including Nigeria, the burden of UI is increasingly recognized, yet epidemiological data remain sparse, and community-based awareness is minimal. Considering the increasing urbanisation and evolving lifestyle patterns in Nigeria, comprehending the behavioural factors of UI is essential for formulating tailored, culturally relevant interventions. There have been numerous studies conducted on this subject in other areas, but none have been conducted in Ilesha, Nigeria. In low- and middle-income countries (LMICs), where healthcare resources are scarce and cultural taboos prevent candid conversation, UI is still stigmatised and frequently ignored despite its high prevalence. The purpose of this study is to close the current knowledge gap on this topic in this area. The study will also highlight the necessity for health promoting initiatives that prioritise appropriate toileting behaviours, enhanced sanitation infrastructure, and the de-stigmatization of urinary symptoms to alleviate the burden of urine incontinence among marginalised populations. It will also assist in determining whether other risk factors for urine incontinence that have been found in other areas also apply in this area

2. Methods

2.1. Study Design and Setting

This cross-sectional study was conducted from February 2024 to March 2025 at the General Outpatient Department (GOPD) of Wesley Guild Hospital in Ilesha, Nigeria. Wesley Guild Hospital is a secondary-level healthcare institution affiliated with the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), offering comprehensive medical services to the residents of Ile-

sha and adjacent communities in Osun State. The hospital caters primarily to an urban and semi-urban population, with a substantial proportion of patients from low- and middle-income socioeconomic backgrounds, rendering it a representative environment for examining health conditions in resource-constrained settings.

2.2. Sample Size and Sampling Technique

The sample size was determined using the formula used by Leslie Fischer [6]. The prevalence of 18.4%, the proportion of respondents with a positive history of dysfunctional urinary behaviors associated with urinary incontinence, was used at 0.05 significance level. The expected non-response rate was 10%. A 10% non-response rate adjustment resulted in a sample size of 270. A convenient sampling technique was employed to choose the 270 eligible study participants.

2.3. Data Collection and Tools

Data was gathered using a questionnaire that was given by facilitated interviewer. The questionnaire was designed to meet the objective of the study with questions adapted from a standardized questionnaire used in a survey of urinary behavior (the Toilectting Behavior-Women's Elimination Behaviors (TB WEB) instrument [3] [7] and urinary tract symptoms among younger women [7]-[9] and the Questionnaire for Urinary Incontinence Diagnosis (QUID): Validity and responsiveness to change in women undergoing non-surgical therapies for treatment of stress-predominant urinary incontinence [1]. The study questionnaire consists of four sections: A, B, C, and D.

Section A: Focuses on data about sociodemographic characteristics of the respondents (age in years, date of birth, sex, religion, marital status and ethnicity).

Section B: Focusses on toilet behaviours, including place preference for urination, premature urination, delayed urination, straining during urination, and positional preference for urination.

Section C: Collect data about urinary incontinence.

Section D: Focuses on data about lower urinary tract symptoms.

The questionnaires were conducted utilising a Likert scale. Section B contains five items, Section C comprises six items, and Section D includes a combination of four and five items.

2.4. Data Analysis

IBM SPSS Statistics (version 27) was used to enter data, clean it up, and analyse it. Frequencies and percentages were used to look at categorical factors. Chi-square was used to look at the relationships between variables that were linked. The results were shown in writing, tables, and bar charts.

2.5. Key Variables and Measurement

The outcome measure was urine incontinence, while the explanatory variables

were urinary habits and sociodemographic factors. The urine behaviours were assessed using a 5-point Likert scale, from "never" to "always". Never, rarely, and neutral were categorised together, whereas often and always were classified together. The average score obtained from this group is 32. Individuals scoring below 32 were categorised as exhibiting bad urinary behaviour, and those scoring above were categorised as demonstrating good urinary behaviour. Urinary incontinence was assessed using a 6-point Likert scale, ranging from none of the time to all of the time. None of the periods existed in isolation, while occasionally, infrequently, frequently, predominantly, and consistently were categorised together. The average score obtained from this group was 11. Individuals scoring below 11 were categorised as experiencing urine incontinence, and those scoring 11 and above were categorised as not experiencing urinary incontinence.

2.6. Ethical Consideration

The Research and Ethics Committee of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, gave their approval for the whole project. Before the poll was sent out, the respondents gave their written permission after being fully informed. The data were then made anonymous. The interviewees' privacy was protected and kept safe during the whole study.

3. Results

3.1. Sociodemographic Characteristics of the Respondents

About 69.9% of the study participants were in the age group of 30 to 39. About half of them were married, and most of them identified as Christians (51.4% and 77.5%, respectively). Most of the participants (92.3%) were Yoruba, and almost half of them (49.3%) had a tertiary education (Table 1).

Table 1. Socio-demographic characteristics of the respondents.

Variables	Frequency (n = 270)	Percentage (%)
Age (in years)		
18 - 29	22	8.1
30 - 39	188	69.9
40 - 49	16	5.7
≥50	44	16.3
Mean Age	33.7 ± 3.6	
Parity		
1	11	4.1
2	66	24.4
≥3	193	71.5
Mean Parity	3.6 ± 1.4	

Continued

Level of Education		
No formal education	21	7.8
Primary	12	4.4
Secondary	104	38.5
Tertiary	133	49.3
Ethnicity		
Yoruba	231	85.6
Igbo	28	10.4
Hausa	11	4.0
Religion		
Christianity	133	49.3
Islamic	122	45.2
Traditional	15	5.5

3.2. Urinary Behaviour of the Respondents

The prevalence of urinary incontinence was 152 (56.3%), with Mixed Urinary Incontinence being the most prevalent, 75 (49%) (Figure 1). Regarding the domain of preferred voiding location, Table 2 showed that almost two-thirds of respondents (65.9%) are constantly concerned about sanity in public restrooms. Approximately 48.0% of those surveyed said they never use public restrooms. Almost half (48.6%) of respondents often or always wait until they arrive home to empty their bladders. In terms of premature voiding, 5.6% of respondents always void without want at work or school, while 17.3% of respondents always void without desire at home. For preventive reasons, just a small percentage of respondents said they always avoided being in someone else's house, in a public setting, and just in case (4.0%, 4.4%, and 11.2%, respectively).

Additionally, 16.5% of respondents said they always attempt to postpone voiding while they are busy while 13.7% of respondents said they regularly suppress their urge to void at work or in school. Approximately 12% said they always suppress their urge to void for as long as feasible. Regarding straining during the voiding phase, just 3.6% of respondents said they always strain to start urinating, and 3.2% said they always strain throughout the entire period of micturition. In contrast, some respondents (10.8% and 10.0%, respectively) always struggle to empty their bladders and to do so more quickly. 38.2% of respondents said they always prefer to sit on the seat when voiding, 8.0% said they always prefer to hover over the toilet, and 19.3% said they always prefer to squat on the toilet. Approximately 39% of the respondents had good urinary behaviour, compared to 61% who have bad urinary behaviour.

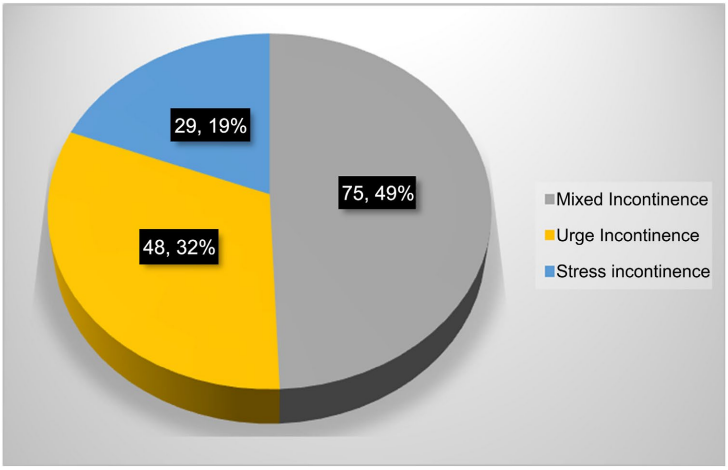

Figure 1. Classification of urinary incontinence among respondents.

Table 2. Urinary behavior of the respondents.

Variables	Never N (%)	Rarely N (%)	Neutral N (%)	Often N (%)	Always N (%)
Place Preference for Voiding					
I worry about sanity in public toilets	23 (8.5%)	12 (4.4%)	10 (3.7%)	40 (14.8%)	164 (60.7%)
I avoid public toilets	23 (8.5%)	31 (11.5%)	22 (8.1%)	54 (20.0%)	119 (44.1%)
I empty the bladder at home	36 (13.3%)	29 (10.7%)	24 (8.9%)	72 (26.7%)	88 (32.6%)
I try to wait until I come home	48 (17.8%)	49 (17.9%)	21 (7.8%)	72 (26.7%)	59 (21.9%)
Premature voiding					
I void without desire at home	116 (43.0%)	42 (15.6%)	19 (7.1%)	29 (10.7%)	43 (15.9%)
I void without desire Work/school	142 (45.9%)	40 (14.8%)	33 (12.2%)	20 (7.5%)	14 (5.2%)
I void without desire in the home of someone else	150 (55.6%)	40 (14.8%)	28 (10.8%)	21 (8.0%)	10 (3.7%)
I void without desire in a public place	162 (60.3%)	37 (13.7%)	20 (7.5%)	19 (7.3%)	11 (3.9%)
I void without desire Just in case, preventive purpose	109 (40.4%)	41 (14.9%)	31 (11.5%)	40 (14.8%)	28 (10.8%)
Delayed voiding					
Try to delay voiding if I'm busy	47 (17.4%)	55 (20.4%)	32 (11.9%)	74 (27.4%)	41 (15.2%)
Restrain the desire as long as possible	63 (23.3%)	60 (22.2%)	37 (13.7%)	58 (21.5%)	31 (11.5%)
Restrain the desire at work/school	60 (22.2%)	48 (17.8%)	27 (10.0%)	80 (29.6%)	34 (12.6%)
Straining voiding					
To initiate the urinating	179 (66.3%)	27 (10.0%)	19 (7.4%)	15 (5.6%)	9 (3.3%)
During the whole urinating process	186 (68.9%)	27 (10.0%)	21 (7.8%)	7 (2.6%)	8 (3.0%)
To empty the bladder completely	162 (60.0%)	23 (8.5%)	15 (5.6%)	22 (8.1%)	27 (10.0%)
To empty the bladder faster	157 (58.1%)	30 (11.1%)	15 (5.6%)	22 (8.1%)	25 (9.3%)
Position preference for voiding					
Sit down on the seat	93 (33.3%)	19 (7.0%)	12 (4.4%)	30 (11.1%)	95 (35.2%)
Hover over the toilet	143 (53.0%)	40 (14.8%)	15 (5.6%)	31 (11.5%)	20 (7.5%)
Squat on the toilet	123 (45.6%)	21 (7.8%)	24 (8.9%)	33 (12.2%)	48 (17.8%)
Overall Urinary Habits					
Bad Urinary Behaviour	165 (61.2%)				
Good Urinary Behaviour	105 (38.8%)				

3.3. Factors Associated with Urinary Incontinence

Table 3 reveals a statistically significant relationship between urinary incontinence and respondents' older age (χ^2 = 4.065, P = 0.044), high parity (χ^2 = 6.576, P = 0.037), and bad urinary behavior (χ^2 = 18.546, P = 0.0001).

Table 3. Factors associated with Urinary incontinence.

Variables	Urinary incontinence (152)	No Urinary incontinence (118)	X^2	P-value
Age				
18 - 39 years	82 (51.3%)	78 (48.7%)	4.065	0.044
≥40 years	70 (63.6%)	40 (36.7%)		
Parity				
1	5 (43%)	6 (57%)	6.576	0.037
2	46 (69.8%)	20 (30.2%)		
≥3	101 (52.3%)	92 (47.7%)		
Ethnicity				
Yoruba	130 (56.3%)	101 (43.7%)		
Igbo	16 (57.1%)	12 (42.9%)	0.022	0.989
Hausa	6 (54.5%)	5 (44.5%)		
Level of Education				
No Formal education	12 (57.1%)	9 (42.9%)		
Primary	5 (41.7%)	7 (58.3%)		
Secondary	57 (54.8%)	47 (45.2%)	1.442	0.696
Tertiary	78 (58.6%)	55 (41.4%)		
Overall Urinary behaviour				
Bad Urinary behaviour	110 (63.6%)	55 (36.4%)	18.546	0.0001
Good Urinary behaviour	42 (44.9%)	63 (55.1%)		

3.4. Determinants of Urinary Incontinence

Urinary incontinence was twice as common among older respondents (Adjusted Odds Ratio [AOR] = 1.53, 95% Confidence Interval [CI] = 1.24 - 2.01; P = 0.002). Urinary incontinence was twice as common in respondents with at least three parous experiences as in those with fewer parous experiences (AOR = 1.84, 95% CI, 1.22 - 1.96; P = 0.016). According to Table 4, respondents with bad urinary behaviour were twice as likely to have urinary incontinence as those with good urinary behaviour (AOR = 1.77, 95% CI, 1.46 - 1.91; P = 0.003).

Table 4. Predictors of Urinary incontinence among respondents.

Variables	Adjusted Odds Ration	Confidence Interval	P-value
Age			
18 - 39 years (ref)	1.00		
≥40 years	1.53	1.24 - 2.01	0.002
Parity			
Para 1 & 2 (ref)	1.00		
≥3	1.84	1.22 - 1.96	0.016
Religion			
Christian (ref)	1.00		
Others	0.23	0.18 - 0.49	0.084
Ethnicity			
Yoruba (ref)	1.00		
Others	0.14	0.11 - 0.59	0.052
Level of Education			
Tertiary (ref)	1.00		
Primary	3.04	0.37 - 3.87	0.061
Secondary	1.81	0.56 - 1.92	0.074
Overall Urinary behaviour			
Good (ref)	1.00		
Bad	1.77	1.46 - 1.91	0.003

4. Discussion

Although there are signs that urine incontinence is a public health issue for Nigerian women, there aren't many studies that look into this issue. According to the results of this study, more than half of the participants suffer from urinary incontinence. This prevalence falls with the range of 2% - 80% reported from a systematic review of studies among African population [10]. However, this finding is in contrast with that of Akinlusi *et al.* [11] who reported a prevalence of 33% among their study participants. The prevalence in our study is also higher compared to the findings of studies conducted among college students in China, Portugal, and the Netherlands, which placed the prevalence of urinary incontinence at 23.6%, 19.9%, and 20.1%, respectively [12]-[14]. The difference in the prevalence might be due to the differences in study population, study design, and data collection methods.

Bad urinary behaviours include worrying about how clean public restrooms are, postponing voiding, emptying the bladder before leaving the house, delaying when busy, straining during urination, and waiting until one can no longer retain pee, according to Perlow *et al.* [15] Urinary incontinence, among other lower urinary tract symptoms, can develop in women who engage in any of these problem-

atic toileting habits.

In our study, majority of the respondents prefer to use a toilet at home, and two-third worried about the sanitation of public toilets. This is similar to the findings of a study done among women in the United States, which revealed that black women preferred to void at home [15]. Women may prefer to void at home because they are exposed to a less-than-ideal toileting environment outside of their residences. The majority of public restrooms are hazardous, dirty, or lack privacy. One-quarter of the participants in this study said they had to strain to start urinating. Furthermore, roughly one-third of respondents said they had difficulty emptying their bladder, and 25% said they strained throughout the entire urinating procedure. Urinary incontinence is a result of all of these factors. Avoiding straining and relaxing the pelvic floor are the best ways to empty the bladder.

Position preference for voiding differs across cultures and environments. In Nigeria, the most common urinating pattern is the squatting method, and it has been associated with a significantly higher maximum flow [3]. On the other hand, different socioeconomic and cultural groups have adopted different position preferences. While one end of the range still uses pit latrines, vented improved latrines, or other options because they encourage squatting, the other end employs western-style toilets that encourage sitting. About half of the respondents squat on the toilet, less than two-thirds sit on it, and less than half hover over it. Women may adopt different voiding positions based on the cleanliness of the toilet, among other factors [15] [16].

In our study, a strong association was found between older age, multiparity, and the development of urinary incontinence. This finding is consistent with those from previous studies [17]-[20]. Denervation injury to the pelvic floor muscles during childbirth has been shown to predispose women to postpartum urinary incontinence [19].

Poor Urinary behavior is a strong predictor of urinary incontinence in this study. Previous studies have corroborated this finding, revealing that urinary behavior such as place preference for voiding, position preference, delayed voiding, straining to void, and premature voiding are associated with development of urinary incontinence [9]-[11] [21].

Study Limitations

The findings from this study should be interpreted in light of the following limitations. First, being a cross-sectional study, a causal relationship cannot be established between the occurrence of urinary incontinence and various risk factors. Additionally, the convenience sampling technique may introduce selection bias thereby limiting the generalizability of the study's findings.

5. Conclusion

This study revealed that poor urinary behavior is highly prevalent among our study population, which mirrors the high prevalence of urinary incontinence

among them. It is important to develop educational materials that address common maladaptive urinary habits that can lead to urinary incontinence. Multiparous women should be the primary focus of this intervention. In addition, public restrooms must to be hygienic, easily accessible, and furnished with all the conveniences women want.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Bradley, C.S., Rahn, D.D., Nygaard, I.E., Barber, M.D., Nager, C.W., Kenton, K.S., *et al.* (2010) The Questionnaire for Urinary Incontinence Diagnosis (QUID): Validity and Responsiveness to Change in Women Undergoing Non-Surgical Therapies for Treatment of Stress Predominant Urinary Incontinence. *Neurourology and Urodynamics*, **29**, 727-734. https://doi.org/10.1002/nau.20818

[2] Mukhopadhyay, S. and Stowers, L. (2020) Choosing to Urinate. Circuits and Mechanisms Underlying Voluntary Urination. *Current Opinion in Neurobiology*, **60**, 129-135. https://doi.org/10.1016/j.conb.2019.11.004

[3] Wu, C., Xue, K. and Palmer, M.H. (2019) Toileting Behaviors Related to Urination in Women: A Scoping Review. *International Journal of Environmental Research and Public Health*, **16**, Article 4000. https://doi.org/10.3390/ijerph16204000

[4] Wang, K. and Palmer, M.H. (2010) Women's Toileting Behaviour Related to Urinary Elimination: Concept Analysis. *Journal of Advanced Nursing*, **66**, 1874-1884. https://doi.org/10.1111/j.1365-2648.2010.05341.x

[5] Lukacz, E.S., Whitcomb, E.L., Lawrence, J.M., Nager, C.W. and Luber, K.M. (2009) Urinary Frequency in Community-Dwelling Women: What Is Normal? *American Journal of Obstetrics and Gynecology*, **200**, 552.e1-552.e7. https://doi.org/10.1016/j.ajog.2008.11.006

[6] Reynolds, W.S., Kowalik, C., Delpe, S.D., Kaufman, M., Fowke, J.H. and Dmochowski, R. (2019) Toileting Behaviors and Bladder Symptoms in Women Who Limit Restroom Use at Work: A Cross-Sectional Study. *Journal of Urology*, **202**, 1008-1014. https://doi.org/10.1097/ju.0000000000000315

[7] Palmer, M.H. and Newman, D.K. (2015) Women's Toileting Behaviours: An Online Survey of Female Advanced Practice Providers. *International Journal of Clinical Practice*, **69**, 429-435. https://doi.org/10.1111/ijcp.12592

[8] Kowalik, C.G., Daily, A., Delpe, S., Kaufman, M.R., Fowke, J., Dmochowski, R.R., *et al.* (2019) Toileting Behaviors of Women—What Is Healthy? *Journal of Urology*, **201**, 129-134. https://doi.org/10.1016/j.juro.2018.07.044

[9] Newman, D.K., Burgio, K.L., Cain, C., Hebert-Beirne, J., Low, L.K., Palmer, M.H., *et al.* (2021) Toileting Behaviors and Lower Urinary Tract Symptoms: A Cross-Sectional Study of Diverse Women in the United States. *International Journal of Nursing Studies Advances*, **3**, Article 100052. https://doi.org/10.1016/j.ijnsa.2021.100052

[10] Bertuit, J., Nzinga, A.L. and Feipel, V. (2025) Female Urinary Incontinence in Africa: Prevalence Estimates from a Systematic Review and Meta-Analysis. *International Urogynecology Journal*, 1-20. https://doi.org/10.1007/s00192-025-06146-6

[11] Akinlusi, F.M., Ottun, T.A., Oshodi, Y.A., Seriki, B.O., Olalere, F.D.H. and Kuye, T.O. (2020) Female Urinary Incontinence: Prevalence, Risk Factors and Impact on the

Quality of Life of Gynecological Clinic Attendees in Lagos, Nigeria. *Nepal Journal of Obstetrics and Gynaecology*, **15**, 31-38. https://doi.org/10.3126/njog.v15i1.29338

[12] Zhou, F., Xue, K., Liu, Y., Zhuo, L., Tu, S. and Palmer, M.H. (2020) Toileting Behaviors and Factors Associated with Urinary Incontinence in College-Aged Female Students in China. *International Urogynecology Journal*, **31**, 961-971. https://doi.org/10.1007/s00192-019-04043-3

[13] Da Roza, T., Brandão, S., Mascarenhas, T., Jorge, R. and Duarte, J. (2015) Urinary Incontinence and Levels of Regular Physical Exercise in Young Women. *International Journal of Sports Medicine*, **36**, 776-780. https://doi.org/10.1055/s-0034-1398625

[14] van Breda, H.M.K., Bosch, J.L.H.R. and de Kort, L.M.O. (2015) Hidden Prevalence of Lower Urinary Tract Symptoms in Healthy Nulligravid Young Women. *International Urogynecology Journal*, **26**, 1637-1643. https://doi.org/10.1007/s00192-015-2754-1

[15] Perlow, A., Joyce, C.J., Bennis, S., Mueller, E.R. and Fitzgerald, C.M. (2023) Toileting Behaviors and Lower Urinary Tract Symptoms among Female Physicians and Medical Students. *Urogynecology*, **29**, 678-686. https://doi.org/10.1097/spv.0000000000001333

[16] Bardino, M., Di Martino, M., Ricci, E. and Parazzini, F. (2015) Frequency and Determinants of Urinary Incontinence in Adolescent and Young Nulliparous Women. *Journal of Pediatric and Adolescent Gynecology*, **28**, 462-470. https://doi.org/10.1016/j.jpag.2015.01.003

[17] O'Brien, C.P. (2024) Pelvic Floor and Sphincter Neuropathy after Childbirth. In: Sultan, A.H., Thakar, R. and Lewicky-Gaupp, C., Eds., *Pelvic Floor, Perineal, and Anal Sphincter Trauma During Childbirth*, Springer International Publishing, 293-316. https://doi.org/10.1007/978-3-031-43095-4_17

[18] Dai, S., Chen, H. and Luo, T. (2023) Prevalence and Factors of Urinary Incontinence among Postpartum: Systematic Review and Meta-Analysis. *BMC Pregnancy and Childbirth*, **23**, Article No. 761. https://doi.org/10.1186/s12884-023-06059-6

[19] Zacchè, M.M. and Toozs-Hobson, P. (2023) The Impact of Pregnancy and Childbirth on the Pelvic Floor. In: Cardozo, L. and Staskin, D., Eds., *Textbook of Female Urology and Urogynecology*, CRC Press, 638-649. https://doi.org/10.1201/9781003144236-66

[20] Patel, K., Long, J.B., Boyd, S.S. and Kjerulff, K.H. (2021) Natural History of Urinary Incontinence from First Childbirth to 30-Months Postpartum. *Archives of Gynecology and Obstetrics*, **304**, 713-724. https://doi.org/10.1007/s00404-021-06134-3

[21] O'Connell, K.A., Nicholas, T.B. and Palmer, M.H. (2023) Toileting Behaviors, Urinary Cues, Overactive Bladder, and Urinary Incontinence in Older Women. *International Urogynecology Journal*, **34**, 707-716. https://doi.org/10.1007/s00192-022-05228-z