



Prevalence, Attitude and Predictors of Public Urination amongst Adults attending a Tertiary Health Facility in Uyo, Nigeria

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Abstract

Background: Public urination is a widespread sanitation challenge and public health concern with global occurrence and regional variation. Despite its prevalence, empirical data on its determinants and public attitudes remain limited, particularly in low-resource settings. This study aimed to assess the prevalence of public urination, examine public attitudes toward the practice, and identify socio-demographic and behavioural predictors of public urination among adults in Uyo, Nigeria.

Methods: A descriptive cross-sectional study was conducted among 361 adults attending the General Outpatient Clinic at the University of Uyo Teaching Hospital, Nigeria, between September 1 and October 31, 2019. Data were collected using a structured questionnaire and analysed using Statistical Package for the Social Sciences (SPSS) Statistics version 17.0. Descriptive statistics summarized socio-demographic and behavioural characteristics and urination practices, while chi-square tests assessed associations between categorical variables. Statistical significance was set at p-value <0.05. Logistic regression was employed to determine independent predictors of public urination and attitudes toward the practice, adjusting for potential confounders. Odds ratios and 95% confidence intervals were generated.

Results: Public urination was highly prevalent, with 78.7% of respondents reporting the behaviour in the past six months. The most cited reasons for public urination were poor sanitary conditions of available toilets (46.8%) and the absence of public toilets (39.4%). A negative attitude toward public urination was reported by 80.9% of respondents, with women significantly more likely than men to disapprove of the practice (86.7% vs. 71.8%, p=0.001). In multivariable analysis, women were twice as likely as men to have a negative attitude toward public urination (aOR=2.00, 95% CI: 1.11–3.67, p=0.02), while rural residents had lower odds of negative attitudes compared to urban residents (aOR=0.45, 95% CI: 0.22–0.75, p=0.004). Employment in the private sector was associated with a higher likelihood of public urination (aOR=2.10, 95% CI: 1.10–3.90, p=0.02). Conversely, being married (aOR=0.48, 95% CI: 0.26–0.90, p=0.02) and having a negative perception of public urination (aOR=0.27, 95% CI: 0.10–0.71, p=0.008) were associated with lower odds of engaging in the behaviour.

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Conclusion: Public urination is a common practice in the study area, largely driven by inadequate sanitation infrastructure. While public disapproval of the behaviour is high, systemic barriers contribute to its persistence. Addressing this issue requires investment in public sanitation facilities, policy enforcement, and behavioural interventions to

promote proper hygiene practices.

Keywords: public urination, adults, Uyo, Nigeria.

Introduction

Sanitation is recognized internationally as a fundamental human right essential for human dignity and public health¹. In July 2010, the United Nations (UN) General Assembly adopted a historic resolution recognizing "the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights."² This recognition was subsequently reaffirmed by the UN Human Rights Council, which specified that these rights are legally binding and derived from the right to an adequate standard of living.¹ Despite this formal recognition, the global sanitation crisis persists, with approximately 4.2 billion people worldwide lacking access to safely managed sanitation facilities.³ The Sustainable Development Goal (SDG) 6 aims to achieve universal access to adequate and equitable sanitation and hygiene for all by 2030, with special attention to the needs of women and girls and those in vulnerable situations.⁴ The link between basic sanitation facilities and public health is well-established, with inadequate sanitation contributing to the transmission of environmentally-related infectious diseases.⁵ Rapid urbanization in developing countries has intensified these challenges, creating greater demand for public toilets in urban spaces where population density is high and movement patterns are complex.⁶

Public urination, defined as the act of urinating in open spaces, public domains, or non-designated areas, represents a specific manifestation of inadequate sanitation facilities. This unhygienic practice constitutes a public health nuisance occurring in both developing and some developed countries, albeit with varying prevalence.⁷ Common reasons for public urination include the absence of public toilet facilities and the poor quality or maintenance of existing facilities, often characterized by unsanitary conditions, lack of privacy, and safety concerns.⁸ The environmental impacts of public urination include soil and water contamination, offensive odours, and degradation of public spaces.⁹ In Nigeria, the practice is widespread, with visible evidence in public spaces across major cities.¹⁰ Despite its prevalence and public health

significance, research specifically focused on public urination remains scarce, with most sanitation studies concentrating on broader issues such as open defecation or general access to toilet facilities.⁹ Additionally, waste management policies do not generally address the issue of public urination, and where they exist, penalties to enforce practice are weak or not meaningful.

Inadequate sanitation disproportionately affects women and girls due to biological differences, social expectations, and safety concerns.¹¹ Women face greater challenges with public urination due to physiological differences that make the act more difficult without proper facilities, requiring more privacy and different postures compared to men. Safety risks are particularly pronounced for women, who may be vulnerable to harassment, assault, or voyeurism when seeking private places to urinate.¹¹ The dignity concerns are also heightened for women, who often face stronger social stigma associated with public urination. Health implications for women include an increased risk of urinary tract infections (UTIs) from delayed urination and urinary stasis leading to the multiplication of microbes. They may also reduce fluid intake to avoid the need to urinate in public. Research has demonstrated that inadequate water intake and unsatisfactory toilet habits are strong predictors of urinary tract infections, with significant associations between UTIs and toilet usage patterns.¹² Menstruation management represents an additional challenge, requiring adequate facilities with water and privacy. Women also have special needs during pregnancy (increased urinary frequency), menopause (urinary urgency), and when experiencing incontinence issues. These gender-specific considerations highlight the importance of gender-sensitive approaches to sanitation planning and interventions addressing public urination.

In Nigeria, sanitation challenges are acute. The economic cost of poor sanitation is substantial, amounting to approximately \$1.3 billion annually.¹³ While considerable attention has been given to open defecation, public urination remains an understudied yet pervasive issue, exacerbated by the scarcity and inadequate maintenance of public toilet facilities. Despite its widespread occurrence, there is a notable gap in empirical data on the prevalence, attitudes, and determinants of public urination, limiting the development of effective interventions. This study

aimed to provide an assessment of public urination practices and attitudes among adults in Uyo, Nigeria, with the goal of informing evidence-based sanitation policies and interventions. Specifically, the study sought to (i) determine the prevalence of public urination, (ii) assess public attitudes toward the practice, (iii) identify socio-demographic and behavioural predictors, and (iv) explore potential strategies to mitigate the problem.

Method

Study Design and Setting

This study utilized an descriptive cross-sectional design, which was suitable for assessing the prevalence, attitudes, and predictors of public urination. The cross-sectional approach allowed for the simultaneous examination of the outcome (public urination) and potential explanatory variables, providing a snapshot of the situation at a specific point in time.

Study Setting

The study was conducted at the University of Uyo Teaching Hospital (UUTH), located in Uyo, the capital city of Akwa Ibom State in southern Nigeria. With an estimated population of approximately 1,457,000 (based on UN projections from available data),¹⁴ Uyo serves as the political, administrative, and commercial centre of Akwa Ibom State. The University of Uyo Teaching Hospital is a tertiary healthcare facility that serves patients from diverse socioeconomic backgrounds across the state, providing an opportunity to capture a heterogeneous study population. The study was conducted over a two-month period from September 1st to October 31st, 2019.

Study Population

The study population comprised adults (aged 18 years and above) attending the General Out-Patient Clinic of the University of Uyo Teaching Hospital during the study period. Inclusion criteria were: (i) age 18 years or older; (ii) residency in Uyo; and (iii) ability to provide informed consent. Exclusion criteria included: (i) severe illness that would impair participation; (ii) cognitive impairment affecting comprehension of the questionnaire; and (iii) healthcare workers or hospital staff.

Sampling

A consecutive sampling technique was employed, whereby all eligible individuals presenting at the clinic during the study period were approached for participation until the required sample size was achieved. This non-probability sampling approach was selected due to its feasibility in the clinical setting and the lack of a sampling frame for probability-based sampling. A sample size of 361 participants was used. While formal probability-based sample size calculations are less applicable to consecutive sampling, we initially considered the Cochran formula¹⁵ for cross-sectional studies: $n = Z^2pq/d^2$, where Z is the standard normal deviate at 95% confidence level (1.96), p is the anticipated prevalence of public urination (assumed to be 50% due to lack of previous data), q is 1-p (0.5), and d is the precision level (0.05). This calculation suggested 384 participants would be ideal. However, our final sample of 361 participants was determined to be sufficient for the study objectives given the exploratory nature of the research and the consecutive sampling approach.

Data Collection Tools and Procedure

Data were collected using a semi-structured questionnaire that was either self-administered (for literate participants) or interviewer-administered (for participants with limited literacy). The questionnaire was developed based on a comprehensive literature review and in-consultation with experts in public health and environmental sanitation. The questionnaire consisted of five main sections: (i) socio-demographic information including age, gender, education level, occupation, marital status, tribe, and religion; (ii) knowledge and practices regarding public urination, including frequency and contexts; (iii) reasons for urinating in public, which assessed the motivations and circumstances that led individuals to engage in public urination; (iv) perception of effects of urinating in public, which evaluated the respondents' understanding of the consequences and impact of public urination; and (v) attitudes toward public urination, assessed through a series of Likert-scale items measuring agreement with statements about acceptability of public urination. The attitude assessment included three statements, with response options ranging from "strongly agree" to "strongly disagree." Attitude scores were calculated by

summing responses to all items, with higher scores indicating more negative attitudes toward public urination. Based on the total score, attitudes were categorized as positive (supportive of public urination) or negative (opposed to public urination) using the median score as the cut-off point. Research assistants with backgrounds in public health administered the questionnaires in private areas of the clinic to ensure confidentiality. Each questionnaire took approximately 20-30 minutes to complete, and participants were given the option to respond in English or the local language (Ibibio) as preferred.

Variable Definitions and Measurements

The primary outcome variable, public urination, was operationally defined as the self-reported act of urinating in a public place, open space, or non-designated area. Participants who reported any instance of public urination during this period were classified as practicing public urination. The frequency of public urination was measured on an ordinal scale: rarely (once per month or less), often (1-3 times per week), and very often (daily). Attitude toward public urination was the second outcome variable, categorized as positive or negative based on the median split of the total attitude score from the three Likert-scale items. Socio-demographic variables included age, gender, marital status, educational level, occupation, ethnicity/tribe and religion. Housing characteristics included the availability of toilet facilities at home. Water and sanitation facilities were assessed by questions about the type of toilet facility at home, sharing of facilities with other households and access to public toilets.

Statistical Analysis

All data analyses were conducted using IBM SPSS Statistics version 17.0 (IBM Corp, Armonk, NY). Descriptive statistics were used to summarize socio-demographic characteristics, public urination practices, attitudes toward public urination, and associated environmental concerns. Continuous variables such as age were assessed for normality and summarized as means with standard deviations, while categorical variables were presented as frequencies and proportions. Comparisons between categorical variables were performed using Pearson's chi-square test (χ^2) or Fisher's exact test where appropriate. The independent t-test was used

to compare the mean age of male and female respondents. Multivariate logistic regression was performed to identify predictors of attitudes toward public urination and public urination behaviour. Adjusted odds ratios (aOR) with 95% confidence intervals (CIs) were reported to determine independent associations while controlling for potential confounders. Multicollinearity among independent variables was assessed using variance inflation factors (VIF), with a threshold of $VIF > 5$ indicating potential collinearity. The area under the receiver operating characteristic (ROC) curve (AUC) was calculated to assess the discriminative ability of the final logistic regression models. A p-value of <0.05 was considered statistically significant for all analyses.

Results

Socio-Demographic Characteristics

A total of 361 adults participated in this study, with a higher proportion of females ($n=228$, 63.2%) than males ($n=133$, 36.8%). The mean age of respondents was 31.4 ± 9.5 years, with males being significantly older than females (34.6 ± 10.0 vs. 29.5 ± 8.6 years; $p < 0.001$). Most participants had attained at least a secondary level of education (93.4%), while 6.6% had primary or no formal education. The majority resided in urban areas (74.8%), and no significant difference was observed between urban and rural respondents. Regarding employment status, 39.6% were government employees, 38.2% worked in the private sector, 17.2% were students, and 4.7% were unemployed, with a statistically significant difference among occupational categories.

Prevalence and Patterns of Public Urination

Public urination was highly prevalent, with 78.7% ($n=284$) of respondents reporting having urinated in public in the past six months. Among those who had urinated in public, 55.6% reported doing so rarely (once per month), 33.5% reported urinating in public one to three times per week, and 10.9% reported daily occurrences. The most frequently cited reasons for public urination were the absence of public toilets (39.4%) and the poor sanitation of available public toilets (46.8%). Other reasons included convenience (11.3%) and additional minor factors (4.5%). Notably, 41.5% of respondents stated that they had never seen a public toilet in the state. In terms of alternative toilet use, 51.8% reported having used

someone else's toilet outside their home due to the lack of public facilities, though this practice did not significantly differ between males and females ($p=0.13$). Most respondents had access to a water closet at home (82.0%), while 15.0% used pit latrines and 3.0% relied on other options.

Table 1: Socio-demographic Characteristics of Respondents

Variable	Total (N=361)	Male (n=133)	Female (n=228)	P-value
Age (Mean \pm SD)	31.4 \pm 9.5	34.6 \pm 10.0	29.5 \pm 8.6	<0.001*
Marital Status				0.26
Single	153 (42.4%)	49 (32.0%)	104 (68.0%)	
Married	191 (52.9%)	79 (41.4%)	112 (58.6%)	
Divorced/Separated	5 (1.4%)	2 (40.0%)	3 (60.0%)	
Widowed	12 (3.3%)	3 (25.0%)	9 (75.0%)	
Educational Level				0.61
None/Primary	24 (6.6%)	10 (41.7%)	14 (58.3%)	
Secondary/Tertiary	337 (93.4%)	123 (36.5%)	214 (63.5%)	
Religion				0.003*
Christianity	337 (93.4%)	119 (35.3%)	218 (64.7%)	
Islam	12 (3.3%)	4 (33.3%)	8 (66.7%)	
Traditional Worship	12 (3.3%)	10 (83.3%)	2 (16.7%)	
Residence				0.53
Urban	270 (74.8%)	97 (36.9%)	173 (64.1%)	
Rural	91 (25.2%)	36 (39.6%)	55 (60.4%)	
Occupation				<0.001*
Government Employee	143 (39.6%)	45 (31.5%)	98 (68.5%)	
Private Sector	138 (38.2%)	70 (50.7%)	68 (49.3%)	
Student	62 (17.2%)	13 (21.0%)	49 (79.0%)	
Unemployed	17 (4.7%)	4 (23.5%)	13 (76.5%)	
Tribe				0.201
Indigene	229 (63.4%)	90 (39.3%)	139 (60.7%)	
Non-indigene	132 (36.6%)	43 (32.6%)	89 (67.4%)	

*P-values <0.05 indicate statistical significance. Age comparison was analyzed using an independent t-test. Categorical variables were tested using the Chi-square or Fisher's exact test where appropriate.

Table 2: Public Urination Practices of Respondents

Variable	Total (N 361)	Male (n 133)	Female (n 228)	P-value
Ever urinated in public past 6 months				0.37
Yes	284 (78.7%)	108 (81.2%)	176 (77.2%)	
No	77 (21.3%)	25 (18.8%)	52 (22.8%)	
Frequency of public urination (n=284)				<0.001*
Rarely (once per month)	158 (55.6%)	43 (39.8%)	115 (65.3%)	
Often (1-3 times a week)	95 (33.5%)	44 (40.7%)	51 (29.0%)	
Very often (daily)	31 (10.9%)	21 (19.4%)	10 (5.7%)	
Uses someone else's toilet				0.13
Yes	187 (51.8%)	62 (46.6%)	125 (54.8%)	
No	174 (48.2%)	71 (53.4%)	103 (45.2%)	
Home sanitary facilities				0.22
Water closet	296 (82.0%)	107 (80.5%)	189 (82.9%)	
Pit latrine	54 (15.0%)	24 (18.1%)	30 (13.2%)	
Others	11 (3.0%)	2 (1.5%)	9 (3.9%)	

*P-values <0.05 indicate statistical significance. Categorical variables were tested using the Chi-square test.

Table 3: Reasons and Perception of Effects of Public Urination (n=284)

Variable	Frequency (n)	Percent (%)
Reasons for Public Urination		
No public toilets when pressed	112	39.4
Dirty public toilets when available	133	46.8
Faster and easier	32	11.3
Other reasons	7	4.5
Perception of Effects of Public Urination		
Could pollute soil surface	320	88.6
May pollute underground water	287	79.5
May contaminate water sources in communities	322	89.2
Could cause bad smell in the environment	345	95.6

Attitudes Towards Public Urination and Predictors

A negative attitude towards public urination was expressed by 80.9% (n=292) of respondents, while 19.1% had a more permissive stance. Women were significantly more likely than men to have a negative attitude (86.7% vs. 71.8%; $p=0.001$). Commonly cited reasons for disapproving of public urination included feeling uncomfortable passing by someone urinating in public (82.5%), disliking the sight of public urination (67.6%), and feeling ashamed to urinate in public (75.4%).

In the multivariable analysis, female gender (aOR=2.00, 95% CI: 1.11–3.67, $p=0.02$) and rural residence (aOR=0.45, 95% CI: 0.22–0.75, $p=0.004$) were associated with a negative attitude towards public urination. The logistic regression model predicting attitudes toward public urination achieved an AUC of 0.75, indicating moderate discriminative ability in distinguishing individuals with negative versus positive attitudes toward the practice.

Predictors of Public Urination Practice

Independent predictors of public urination included employment in the private sector, with respondents, particularly artisans, being more likely to urinate in public (aOR=2.10, 95% CI: 1.10–3.90, $p=0.02$). Conversely, respondents with secondary/tertiary level of education (aOR=0.05, 95% CI: 0.003–0.76, $p=0.03$), married respondents (aOR=0.48, 95% CI: 0.26–0.90, $p=0.02$), divorced or separated individuals (aOR=0.06, 95% CI: 0.01–0.58, $p=0.01$), non-indigenes (aOR=0.47, 95% CI: 0.27–0.84, $p=0.01$), and those with a negative attitude towards public urination (aOR=0.27, 95% CI: 0.10–0.71, $p=0.008$) were significantly less likely to engage in public urination. The model predicting public urination practice achieved an AUC of 0.74, indicating moderate discriminative ability in distinguishing individuals who engaged in public urination from those who did not.

Table 4: Predictors of negative Attitude to Public Urination

Variable	OR (95% CI)	P-value	aOR (95% CI)	P-value
Age				
<30	Ref		Ref	
30 and above	0.47 (0.27–0.80)	0.006*	0.56 (0.27–1.13)	0.11
Gender				
Male	Ref		Ref	
Female	2.54 (1.49–4.33)	0.001*	2.00 (1.11–3.67)	0.02 *
Education				
None/Primary	Ref		Ref	
Secondary/Tertiary	3.37 (1.43–7.94)	0.006*	1.38 (0.51–3.72)	0.52
Occupation				
Govt Employee	Ref		Ref	
Private	0.47 (0.26–0.85)	0.01*	0.55 (0.28–1.07)	0.08
Student	0.89 (0.39–2.03)	0.79	0.52 (0.20–1.40)	0.20
Unemployed	2.75 (0.35–21.88)	0.34	2.72 (0.33–22.29)	0.35
Residence				
Urban	Ref		Ref	
Rural	0.37 (0.21–0.65)	<0.001*	0.45 (0.22–0.75)	0.004 *
Religion				
Christianity	Ref		Ref	
Islam	0.64 (0.17–2.42)	0.51	0.51 (0.12–2.27)	0.38
Traditional Worship	0.15 (0.04–0.49)	<0.002*	0.46 (0.12–1.70)	0.24
Marital Status				
Single	Ref		Ref	
Married	0.63 (0.36–1.12)	0.12	0.98 (0.48–2.02)	0.96
Divorced/Separated	0.25 (0.04–1.59)	0.15	0.37 (0.04–3.11)	0.36
Widowed	0.23 (0.07–0.81)	0.02*	0.43 (0.09–1.94)	0.27
Tribe				
Indigene	Ref		Ref	
Non-indigene	1.66 (0.93–2.96)	0.09	—	—

Table 5: Predictors of Urinating in Public

Variable	OR (95% CI)	P-value	aOR (95% CI)	P-value
Age				
<30	Ref		Ref	
30 and above	0.94 (0.57–1.56)	0.82	—	—
Gender				
Male	Ref		Ref	
Female	0.78 (0.46–1.33)	0.37	—	—
Education				
None/Primary	Ref		Ref	
Secondary/Tertiary	0.15 (0.02–1.12)	0.06	0.05 (0.003–0.76)	0.03 *
Occupation				
Govt Employee	Ref		Ref	
Private	2.30 (1.27–4.05)	0.01 *	2.1 (1.10 –3.90)	0.02*
Student	3.40 (1.42–8.02)	0.01 *	2.2 (0.90 –5.73)	0.08
Unemployed	1.03 (0.34–3.11)	0.95	1.2 (0.36–4.24)	0.73
Residence				
Urban	Ref		Ref	
Rural	1.24 (0.68–2.27)	0.48	—	—
Religion				
Christianity	Ref		Ref	
Islam	0.24 (0.08–0.79)	0.02 *	0.20 (0.06–0.88)	0.03 *
Traditional Worship	0.50 (0.15–1.69)	0.26	0.30 (0.07–1.52)	0.15
Marital Status				
Single	Ref		Ref	
Married	0.54 (0.31–0.94)	0.03 *	0.43 (0.23–0.83)	0.01 *
Divorced/Separated	0.12 (0.02–0.74)	0.02 *	0.03 (0.004–0.33)	0.003 *
Widowed	0.35 (0.10–1.27)	0.11	0.23 (0.04–1.15)	0.07
Tribe				
Indigene	Ref		Ref	
Non-indigene	0.44 (0.26–0.74)	<0.001*	0.47 (0.27–0.84)	0.01 *
Attitude				
Positive	Ref		Ref	
Negative	0.36 (0.16–0.82)	0.02 *	0.27 (0.10–0.71)	0.008 *

Perceived Consequences and Recommendations

Most respondents recognized the potential environmental hazards associated with public urination. Most reported concerns about soil contamination (88.6%), groundwater pollution (79.5%), contamination of water sources in communities (89.2%), and foul odour in the environment (95.6%). In terms of recommended interventions, 69.3% of respondents advocated for the enactment and enforcement of laws to prevent public urination, while 93.9% recommended the construction of public toilets by the government or private entities to provide more accessible sanitation facilities.

Discussion

This study examined the prevalence, attitudes, and predictors of public urination among adults in Uyo, Nigeria, revealing key insights into the underlying factors that drive this practice. Public urination was highly prevalent, with 78.7% of respondents reporting public urination within the past six months. The primary reasons cited were the absence of public toilet facilities (39.4%) and the poor sanitary conditions of available toilets (46.8%), indicating substantial infrastructural and maintenance deficiencies. Despite the high prevalence, 80.9% of respondents expressed negative attitudes toward public urination, suggesting that the behaviour is often driven by necessity rather than choice. Multivariable logistic regression identified occupation, marital status, non-indigenous ethnicity, and a permissive attitude toward the practice as independent predictors of public urination, emphasizing the role of both structural and behavioural determinants in shaping sanitation practices.¹⁶

The high prevalence of public urination observed in this study highlights the widespread nature of the practice. However, the lack of directly comparable

studies on public urination, as most research has focused on open defecation, limits the ability to contextualize these findings within broader sanitation patterns.¹⁷ These findings must be interpreted in the context of severe sanitation infrastructure deficits, as evidenced by 41.5% of respondents reporting that they had never seen a public toilet. This reflects broader national challenges, with Nigeria bearing one of the highest burdens of open defecation in Africa.¹⁸ The reported frequency of public urination, where 55.6% of respondents indicated they urinate in public rarely (once per month or less), suggests that the practice is largely driven by necessity rather than habitual behaviour. The widespread negative attitudes toward public urination (80.9%) further support this interpretation, indicating that most individuals resort to public urination only in the absence of viable alternatives.

Gender differences in attitudes and behaviours toward public urination were significant, with females significantly more likely than males to express negative views (86.7% vs. 71.8%, $p=0.001$). This disparity reflects broader gendered sanitation challenges, as women face greater physical, social, and safety constraints when urinating in public.¹⁹ The need for privacy and the difficulty of assuming appropriate postures make public urination less feasible for women. Consequently, women generally engage in public urination less frequently than men. The public health implications of inadequate sanitation are particularly severe for women, who are more susceptible to urinary tract infections (UTIs) when they lack access to clean and private toilets.²⁰ These findings highlight the need for gender-sensitive sanitation planning that prioritizes safe, accessible, and hygienic facilities for women, particularly in public spaces.

The identification of occupation, marital status, and non-indigenous ethnicity as predictors of public urination provides important insights for targeted interventions. Private-sector employees, particularly artisans, were more likely to engage in public urination, likely due to limited access to workplace sanitation facilities and the constraints of informal work environments. This underscores the importance of workplace sanitation policies, especially in small businesses and street-based occupations. The association between non-indigenous status and public urination may reflect

challenges faced by migrants or non-locals in navigating unfamiliar environments, where they may have limited knowledge of available facilities or restricted access to private sanitation options. This suggests the need for better signage, public awareness campaigns, and targeted urban planning efforts to improve sanitation access for transient populations.

The relationship between marital status and public urination suggests that differences in daily movement patterns and time spent in public spaces may influence sanitation behaviours. Married individuals may be less exposed to situations where public urination is necessary, either due to more time spent in domestic settings or increased access to private facilities. Alternatively, social and cultural expectations surrounding married individuals may deter engagement in the practice. These socio-demographic determinants differ from those typically associated with open defecation, which is more commonly linked to education level and socioeconomic status. This distinction highlights the need for intervention strategies tailored specifically to public urination, addressing infrastructure, workplace policies, and accessibility barriers.

Policy and Intervention Implications

Our findings have important implications for addressing public urination in a resource-limited context. Respondents showed strong support for both laws against public urination (69.3%) and the construction of public toilets (93.9%). Similar measures of payment of fines or community service for specified number of hours by offenders^{21,22} and addressing infrastructure and its maintenance for both men and women^{23,24} were reported in other studies. Since the lack of facilities and poor maintenance drive public urination, prioritizing infrastructure development and maintenance is crucial. The support for public toilets suggests this intervention would be welcomed. However, past experiences indicate that building toilets without ensuring maintenance, accessibility, and cultural acceptability may not work. With 46.8% citing dirty facilities as a reason for public urination, ongoing maintenance is critical. While regulatory measures have support, enforcement may be difficult without adequate facilities. In addition, providing public awareness campaign aimed at behaviour change on public urination such as writings on billboards on

the walls frequently used by men to urinate,^{25,26} and even coating walls with a hydrophobic paint to repel urine, in San Francisco and Hamburg are additional measures to stop this practice.²⁷ Thus, a comprehensive approach addressing infrastructure, maintenance, behaviour change, and regulations is likely to be most effective, especially for high-risk groups like private employees, artisans, and non-indigenous residents.

Limitations

Several limitations should be considered when interpreting the findings of this study. First, the recruitment of participants from a healthcare facility introduces potential selection bias. Patients seeking healthcare may differ systematically from the general population in ways that affect sanitation behaviours or attitudes. Second, the reliance on self-reported data about public urination introduces the potential for recall bias and social desirability bias. Participants may have underreported their frequency of public urination due to social stigma, though the high reported prevalence suggests this bias may not have been severe. Third, the cross-sectional design precludes establishment of causal relationships between predictors and outcomes, allowing only for identification of associations. Fourth, while the sample size was adequate for overall prevalence estimation, it may have limited power for detecting associations in some subgroup analyses. Fifth, the use of a consecutive sampling approach rather than probability sampling limits the generalizability of the findings, though the diversity of patients at the teaching hospital somewhat mitigates this concern. Despite these limitations, the study provides valuable baseline data on a previously under-researched topic and identifies important patterns and associations that can inform intervention planning. Directions for future research may include exploring similar behaviours among physically challenged persons as they may have special needs and find the lack of sanitary infrastructure far more challenging.

Conclusion

This study has documented a high prevalence of public urination, primarily due to inadequate sanitation infrastructure and poor maintenance of existing facilities. Despite widespread practice, most participants hold negative attitudes toward public

urination, indicating a population that recognizes the problems associated with the practice but lacks alternatives. Key predictors include occupation (private employees/artisans), marital status, non-indigenous ethnicity, and positive attitudes, which can guide targeted interventions. The findings highlight the urgent need for a comprehensive approach to address public urination, including increased provision and maintenance of public toilets, targeted awareness and behaviour change initiatives for high-risk groups, and appropriate regulatory frameworks. These strategies must be gender-sensitive, acknowledging the unique challenges women face in accessing sanitation.

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