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Original Research Article

The interrelationship between abnormal vaginal discharge, genital hygiene practices, and sexual behaviours among women of reproductive age in Ibadan, Nigeria

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ABSTRACT

Background: Abnormal vaginal discharge (AVD) is a common condition in women, often linked to infections and reproductive health complications. This study investigates the prevalence of AVD among women in Ibadan, Nigeria, and assesses its relationship with genital hygiene practices, and sexual behaviors.
Methods: A cross-sectional study was conducted among 366 women aged 18-49 using structured interviewer-administered questionnaires. Data were analyzed using Pearson correlation and linear regression models in statistical package for the social sciences (SPSS) 25.0.
Results: The prevalence of AVD was 42.1%, with 59.2% of affected women not seeking medical care due to financial constraints, stigma, or misconceptions. Poor genital hygiene (r=0.278, p=0.002) and risky sexual behaviours (r=-0.327, p=0.000) significantly increased AVD occurrence. Most women (90.2%) used water for genital cleaning, while 21.3% used soap and 16% relied on specialized hygiene products. Additionally, 41% of women used contraception, but only 27.1% used it consistently. Cultural influences such as: taboo, limited access to hygiene education, use of traditional herbs (OR=1.89, 95% CI: 1.02–3.51, p=0.042) also played a significant role in hygiene practices. Almost a quarter, 23.2%, of participants reported that AVD negatively affected their intimate relationships.
Conclusions: The findings underscore the necessity for public health initiatives that enhance genital hygiene education, promote safer sexual practices, and improve access to healthcare services. Addressing cultural and societal barriers such as stigma and religious norms is crucial to improving reproductive health outcomes and reducing complications associated with abnormal vaginal discharge among women in Ibadan.

Keywords: Abnormal vaginal discharge, Genital hygiene, Sexual behaviours, Reproductive health, Nigeria

INTRODUCTION

Abnormal vaginal discharge (AVD) is a common clinical symptom among women of reproductive age, often signalling reproductive tract infections (RTIs) or sexually transmitted infections (STIs).[1,2] Although AVD itself is not classified as a disease, if left untreated, it can lead to severe complications such as pelvic inflammatory disease (PID), ectopic pregnancy, infertility, and an increased risk of genital tract malignancies.[3,4] Early detection and treatment are therefore critical in reducing these risks, particularly in resource-limited settings where healthcare access is restricted [5]. However, diagnosing AVD is complicated by its diverse aetiology, as it can result from both infectious and non-infectious factors.[6] Sexually transmitted infections (STIs), including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis*, are major contributors to AVD, particularly in

low- and middle-income countries, where they present a significant public health challenge.[7,8] In addition to infectious causes, non-infectious conditions like bacterial vaginosis (BV) and vulvovaginal candidiasis (VVC) also contribute to AVD.[9]

In Nigeria, AVD is a common health issue, with prevalence rates reported at 55.6% in Imo State and 47.7% in Bauchi State.[10,11] Several risk factors contribute to AVD, including urban residence, higher education levels, pregnancy, sexual activity, and lack of contraception during first intercourse.[10,12] Additionally, lower socioeconomic status is associated with higher prevalence rates.[11] Furthermore, poor genital hygiene, improper use of hygiene products, and certain contraceptive methods are key risk factors for AVD.[13] A lack of knowledge and fear of stigma delay medical care, while risky sexual behaviours, such as early sexual debut, multiple partners, and unprotected sex, increase AVD risk, especially in areas with limited sexual health education.[14]

Despite the high prevalence of AVD in Nigeria, particularly in Ibadan, there is a lack of understanding regarding the interaction between genital hygiene practices, sexual behaviours, and cultural factors. While some studies have explored these factors separately, few have examined them together in the context of Nigerian culture.[14] This research aims to address this gap by determining the prevalence of AVD, its association with genital hygiene practices, and the role of sexual behaviours and cultural factors in its occurrence and management.

METHODS

Study type

The study adopted a cross-sectional design to investigate the interrelationship between AVD, genital hygiene practices, and sexual habits among women of reproductive age in Ibadan, Nigeria. The study targeted women aged 18 to 49 years residing in Ibadan, and participants were selected based on clear inclusion and exclusion criteria to ensure the relevance of the findings.

Study place

This study was conducted in Ibadan, the capital and largest city of Oyo State, Nigeria. With an estimated population of 4.04 million, Ibadan is one of Nigeria's most populous cities and a major healthcare hub in the South-Western region.[15] The study was conducted in Ajibode, Bodija, and Agbowo, which represent both urban and semi-urban areas, ensuring a diverse range of socioeconomic and cultural backgrounds. Data collection for this study took place from July to September 2024.

Inclusion criteria

The study included women aged between 18 and 49 years old, diagnosed or undiagnosed with abnormal vaginal discharge, were recruited through community outreach, and public announcements. Pregnant or breastfeeding women, those with chronic diseases hindering informed consent, and those who declined participation were excluded.

Data collection procedure

A structured questionnaire was used to gather data on abnormal vaginal discharge, genital hygiene, and sexual activity patterns. Data collectors filled out the questionnaires based on participants' responses, with translators available to assist with language barriers. A pre-test was conducted in a nearby community to evaluate and refine the questionnaire for the main study.

Statistical analysis

Collected data were analysed using statistical package for the social sciences (SPSS) version 25.0 to examine the relationships between genital hygiene, sexual pattern, and abnormal vaginal discharge. Descriptive statistics were used to summarize the demographic characteristics and other key variables. Pearson correlation analysis was conducted to assess the strength and direction of the associations between these variables. A linear regression analysis was performed with abnormal vaginal discharge as the dependent variable and sexual pattern and genital hygiene as the independent variables. These variables were selected based on their relevance to the research objectives, with sexual pattern chosen due to its potential link to reproductive health and infections, and genital hygiene selected for its known impact on vaginal health. All tests were conducted with a significance level set at $p<0.05$.

RESULTS

A total of 366 women of reproductive age participated in the study. The majority of respondents (38.3%) were aged 18–25 years, followed by those aged 26–30 years (18%) (Table 1). Regarding marital status, 50% were single, 42.1% were married, and the rest were either divorced, separated, or widowed. Educational attainment revealed that 62.8% of participants had completed university education, 31.1% had secondary-level education, while only 2.2% had non-formal education. Occupational data indicated that 46.2% of participants were unemployed, while civil servants, students, traders, and artisans made up the remaining 53.8%.

Out of the 366 participants, 154 (42.1%) of participants had experienced AVD at some point, with 77 (21.4%) experiencing it at the time of the study (Table 2). The majority of women who reported AVD described the discharge as "thick and white" (70.1%), while 27.3% described it as "thin and watery." The most common colours of the discharge were "yellow or green" (40.6%) and "frothy" (45.3%). The duration of symptoms varied,

with 63.2% of women reporting the discharge had lasted 1-6 months, and 19.7% experiencing it for over a year.

Table 1: Demographic information of women of reproductive age group in Ibadan Nigeria.

Parameters	N	%
What is your age as at the last birthday? (years)		
18-25	140	38.3
26-30	66	18
31-35	52	14.2
36-40	53	14.5
41 and above	55	15
Marital status		
Single	183	50
Married	154	42.1
Divorced	10	2.7
Separated	13	3.6
Widowed	6	1.6
Highest level of education completed		
Primary	14	3.8
Secondary	114	31.1
University	230	62.8
Non-formal education	8	2.2
Occupation		
Civil servant	95	26
Student	75	20.5
Trader	73	20
Artisan	44	12.1
Others	78	21.4
Nil	169	46.2
Number of times given birth to babies		
Nil	184	50.3
1-3	139	38
4-6	39	10.7
6 and above	4	1.1
Number of living children		
Nil	185	50.7
1-3	141	38.6
4-6	37	10.1
6 and above	2	0.5

Regarding medical treatment, 59.2% of women never sought care for AVD. The primary reasons for this included believing the condition was "normal" (41.5%), lack of funds (9.2%), and lack of prior experience with the symptoms (23.1%). Other reasons cited were self-medication and discomfort in discussing the symptoms.

Genital hygiene practices varied among participants. Most respondents (75.7%) reported showering twice a day, while 22.4% showered once a day (Table 3). Most women 90.2% used water to clean their genital area, followed by soap (21.3%) and feminine wash (4.4%). Other cleaning methods included antiseptic products such as Dettol (2.5%), clove water (0.6%), and wipes (1.1%).

Table 2: Prevalence and characteristics of abnormal vaginal discharge among women of reproductive age in Ibadan (2024).

Parameters	N	%
Prevalence of abnormal vaginal discharge		
Yes	154	42.1
No	212	57.9
Morphological characteristics of abnormal vaginal discharge		
Thin and watery	42	27.3
Thick and white	108	70.1
Other	4	2.6
Current incidence of abnormal vaginal discharge		
Yes	77	21.4
No	282	78.6
Coloration of abnormal vaginal discharge (for those experiencing AVD)		
Yellow or green	26	40.6
Frothy	29	45.3
Other	9	14.1
Duration of abnormal vaginal discharge		
Less than 1 month	8	10.5
1–6 months	48	63.2
7–11 months	1	1.3
1 year	4	5.3
More than 1 year	15	19.7
Medical intervention sought for abnormal vaginal discharge		
Yes	119	40.8
No	173	59.2
Reasons for not seeking medical care (for those not seeking treatment)		
Financial constraints	6	9.2
Lack of previous experience	15	23.1
Perceived no need for treatment	27	41.5
Assumed it was a normal condition	3	4.6
Discomfort with medical consultation	1	1.5
Reliance on self-medication	2	3.1
Reluctance to disclose symptoms	1	1.5
Lack of knowledge/education	1	1.5
Embarrassment	1	1.5
Use of traditional remedies (herbal)	1	1.5
Association with ovulation	1	1.5

In terms of education on genital hygiene, 64.9% of the respondents reported ever having received some form of education on proper genital hygiene practices. However, the majority of the participants 85% expressed interest in receiving further education on genital hygiene, suggesting a strong need for targeted health interventions. Regarding education on genital hygiene, 62.8% of respondents had received some form of education, with primary sources being the internet (32%), health centres (26.8%), and educational programs (21.1%). Comfort with discussing genital health topics also varied, with 32.4% of women

reporting they were "quite comfortable," and 30.4% being "very comfortable" talking about these issues with friends.

Table 3: Practices and education on genital hygiene among women of reproductive age in Ibadan (2024).

Parameters	N	%
Frequency of bathing or showering per day		
Once per day	82	22.4
Twice per day	277	75.7
Every other day	6	1.6
Less than once a week	1	0.3
Methods used for genital area cleaning		
Water	330	90.2
Soap	78	21.3
Tissue paper	2	0.6
Dettol (antiseptic)	9	2.5
Clove water	2	0.6
Body cleanser	1	0.3
Feminine wash	16	4.4
Sponge	5	1.4
Wipes	4	1.1
Antiseptic	2	0.6
Shampoo	2	0.6
Hand	2	0.6
Use of specific genital hygiene products		
Yes	58	16
No	305	84
Types of genital hygiene products used		
Antiseptic detergent	1	1.7
Soap	9	15.5
Dettol (antiseptic)	16	27.6
Shampoo	2	3.5
Femfresh	3	5.2
Oriflame feminine wash	4	6.9
Medication and herbs	2	3.5
Haizer and V.G Johnson	2	3.5
Klovinal	2	3.5
Clove and ordinary water	3	5.2
Foreva vaginal gel	2	3.5
Ytacan and Besence	2	3.5
Virony and Softcare	2	3.5
Received education on proper genital hygiene		
Yes	237	64.9
No	128	35.1
Interest in receiving education on genital hygiene		
Yes	108	85
No	19	15

Contraception use, education on genital hygiene, and comfort levels with discussing genital health topics among women of reproductive age in Ibadan varied across different groups (Table 4). About a third of the participant, 32.5% agreed to engage in unprotected sex with a partner whose sexual history they were unsure of.

Table 4: Sexual activity and contraception use, education, and comfort with genital health discussions among women of reproductive age in Ibadan (2024).

Parameters	N	%
Sexual activity		
Yes	204	56.5
No	157	43.5
Self-assessment of sexual activity		
Never active	113	32.3
Slightly active	45	12.9
Quite active	103	29.4
Very active	89	25.4
Number of sexual partners in the last 5 years		
None	105	28.7
1	182	49.7
2–3	67	18.3
4 or more	12	3.3
Current number of sexual partners		
None	115	31.7
1	222	61.2
2–3	20	5.5
4 or more	6	1.7
Contraceptive use during sexual activity		
Yes	144	41
No	207	59
Frequency of contraceptive use		
Every time	38	27.1
Occasionally	68	48.6
Only when not in safe personal	31	22.1
Never	3	2.1
Unprotected sex with uncertain partner sexual history		
Yes	116	32.5
No	241	67.5
Received education on genital hygiene		
Yes	228	62.8
No	135	37.2
Sources of education on genital hygiene		
Book	2	0.9
Church	27	11.8
Health centre	61	26.8
Internet	73	32.0
Education	48	21.1
Friends and family	24	10.5
NGO	13	5.7
Mass media	6	2.6
Comfort with discussing genital health topics with friends (1=not comfortable, 10=very comfortable)		
Not comfortable	89	26.3
Slightly comfortable	37	10.9
Quite comfortable	110	32.4
Very comfortable	103	30.4

The study revealed that a majority of women 83.1% had little or no challenges in maintaining genital hygiene, with

16.9% citing barriers such as access to clean water, financial constraints, and body pain. Nearly half, 47.1% of the participants were aware of the causes of AVD, with common beliefs linked to multiple sexual partner and unprotected sex (47.5%), poor environment (45.9%), and improper hygiene (44.3%). Cultural factors were reported by 10.3% of women as influencing their hygiene practices, while 13.9% identified societal factors, including social media and public awareness, as having an impact on their genital hygiene behaviours. Regarding healthcare and discussions about genital hygiene, 49% of women had consulted with a healthcare provider on the topic, and 26.8% faced challenges accessing healthcare services related to genital and sexual health. Additionally, 59.8% of women were in intimate relationships, and 23.2% reported that AVD had negatively impacted their relationships.

The correlation analysis revealed a significant positive association between poor genital hygiene and the prevalence of AVD (r=0.278, p=0.002). Conversely, sexual behaviours were negatively correlated with AVD (r=-0.327, p=0.000), indicating that riskier sexual patterns were associated with higher prevalence of AVD (Table 6). There was no significant relationship between genital hygiene and sexual behaviours (r=0.093, p=0.516). The regression analysis, which explored the influence of sexual pattern and genital hygiene on abnormal vaginal discharge, showed that both variables had a significant impact on abnormal vaginal discharge (Table 6).

Sexual pattern was negatively associated with abnormal vaginal discharge (unstandardized coefficient=-0.129, p=0.000). Genital hygiene was positively associated with abnormal vaginal discharge (unstandardized coefficient=0.123, p=0.002).

Table 5: Challenges, awareness, and factors affecting genital hygiene among women of reproductive age in Ibadan, Nigeria.

Parameters	%
Faced challenges in genital hygiene	
Yes	16.9
No	83.1
Awareness of causes of abnormal vaginal discharge	
Yes	47.1
No	52.9
Beliefs about causes of abnormal vaginal discharge	
Multiple and unprotected sex	47.5
Poor environment	45.9
Disease	40.9
Improper hygiene	44.3
Cultural factors influencing hygiene	
Yes	10.3
No	89.7
Societal factors influencing hygiene	
Yes	13.9
No	86.1
Discussed hygiene with healthcare provider	
Yes	49.0
No	51.0
Challenges accessing healthcare	
Yes	26.8
No	73.2
In an intimate relationship	
Yes	59.8
No	40.2
Impact of AVD on relationship	
Yes	23.2
No	76.2

Table 6: Correlation and regression analysis for sexual pattern, genital hygiene, and abnormal vaginal discharge.

Variables		Genital hygiene	Sexual pattern	Abdominal vaginal discharge
Correlation analysis				
Genital hygiene	Pearson correlation	1		.
	Sig. (2-tailed)			
Sexual pattern	Pearson correlation	0.093	1	
	Sig. (2-tailed)	0.516		
Abdominal vaginal discharge	Pearson correlation	0.278**	-0.327**	1
	Sig. (2-tailed)	0.002	0.000	

Regression analysis for sexual pattern and genital hygiene with abnormal vaginal discharge					
Variables	**Unstandardized coefficients**		**Standardized coefficients**	**t**	**Sig.**
	B	**Std. error**	**Beta**		
Constant	1.874	0.053		35.193	0.000
Sexual pattern	-0.129	0.032	-0.327	-3.990	0.000
Genital hygiene	0.123	0.038	0.278	3.196	0.002

Dependent variable: abnormal vaginal discharge, **p<0.05 statistically significant

DISCUSSION

The focus of this study, which was conducted among 366 women of reproductive age group, was to examine the prevalence as well as the interrelationship between AVD genital hygiene practices and sexual behaviour among women of reproductive age in Ibadan. The prevalence of AVD in this study was found to be 42.1%, aligning with findings from other regions in Nigeria. Indeed, Uwakwe et al and Magaji and Mahmud reported prevalence rates of 55.6% and 47.7%, respectively, in Nigeria.[10,11] These results suggest that AVD is a significant public health concern, affecting a substantial portion of the female population. The high prevalence calls for targeted health interventions that address both medical and social factors contributing to the condition.

Despite the high prevalence of AVD, the study revealed that only 40.8% of women sought medical care. This finding is concerning, as untreated AVD can lead to severe complications such as pelvic inflammatory disease (PID), ectopic pregnancy, and infertility. Barriers to seeking treatment included the belief that AVD is "normal," financial constraints, and stigma around reproductive health issues, consistent with findings from Stewart et al and Rowley et al.[7,16] These barriers highlight the urgent need for increased health education and improved healthcare access, especially in resource-limited settings.

Regarding genital hygiene, the study found that 90.2% of participants used water to clean their genital area, but only 21.3% used soap, and just 4.4% used feminine hygiene products. The use of water alone may not be sufficient to prevent infections, as suggested by Burka et al.[6] Furthermore, only 16% of women used specific genital hygiene products such as antiseptic soaps or feminine washes. This gap in the availability and proper use of hygiene products likely contributes to the high rates of AVD in the population.[17]

The findings also showed that only two thirds of the respondents had received some form of education on genital hygiene, signalling the need for additional educational programs. A study in Turkey conducted by Ocaktan et al found that only 21.5% of women had daily baths and 71.8% practiced proper wiping after toilet use, with education and socioeconomic factors influencing hygiene behaviours.[18] Another study conducted by Sağlık et al demonstrated a positive correlation between health literacy levels and genital hygiene behaviours among female university students.[19] The fact that 85% of participants expressed interest in receiving further education underscores the importance of improving access to targeted health education about hygiene practices.[20] In terms of sexual behaviours, the study found that 56.5% of women were sexually active, with 41% using contraception. However, only 27.1% of sexually active women used contraception every time, indicating inconsistent use of contraceptive methods. This finding is consistent with Mammen et al, which identified inconsistent contraception use as a key factor in the spread of sexually transmitted infections (STIs) and unintended pregnancies.[2] Additionally, about one-third of the participants 32.5% reported engaging in unprotected sex with a partner whose sexual history they were unsure of, which increases the risk of STIs that contribute to AVD. These findings point to the need for promoting consistent use of contraception and safer sexual practices, as part of a broader sexual health education campaign. Furthermore, cultural and societal influences were identified, with 10.3% of women citing cultural factors and 13.9% mentioning societal influences like media and public awareness. These findings emphasize the importance of culturally sensitive health interventions that consider local norms and expectations around hygiene and sexual health.[21]

Access to healthcare was another significant issue, with 26.8% of women reporting challenges in accessing healthcare services related to genital and sexual health. This finding points to ongoing barriers such as limited healthcare infrastructure, financial constraints, and stigma surrounding reproductive health. The findings are consistent with Adams et al., who noted that healthcare access in Ibadan is constrained by both economic and social factors.[15] These barriers prevent women from seeking timely treatment for AVD and other reproductive health issues, highlighting the need for more accessible, affordable, and stigma-free healthcare services.

Finally, the study found that AVD had a negative impact on the participants' intimate relationships. This underscores the social and psychological consequences of AVD, which can contribute to emotional distress and reduced self-esteem, consistent with the work of Das et al.[4] The study also revealed a significant positive association between poor genital hygiene and the prevalence of AVD, which confirms that poor hygiene practices increase the risk of AVD. Conversely, sexual patterns were negatively associated with AVD, indicating that riskier sexual behaviours contribute to higher AVD prevalence. These findings emphasize that both hygiene and sexual behaviours are significant predictors of AVD, which suggests the need for targeted interventions focusing on both aspects to reduce AVD prevalence. The non-significant correlation between genital hygiene and sexual behaviours suggests that interventions targeting hygiene and sexual health should be designed independently but simultaneously to effectively reduce the incidence of AVD. Additionally, the study established that both hygiene practices and sexual patterns are key predictors of AVD, highlighting the need for integrated health interventions that focus on improving both hygiene practices and sexual health behaviours to reduce the incidence of AVD in this population.

Limitations

This study, while providing valuable insights into the prevalence and factors associated with AVD among

women in Ibadan, Nigeria, has some limitations. First, the sample was drawn from urban and semi-urban areas of Ibadan, limiting the generalizability of the findings to rural populations or other regions of Nigeria. Additionally, the reliance on self-reported data for genital hygiene practices and sexual behaviours introduces the potential for social desirability bias, with participants possibly underreporting risky behaviours or over-reporting hygiene practices.

CONCLUSION

This study examined the relationship between AVD, genital hygiene, and sexual behaviors among women in Ibadan, Nigeria. The findings revealed a high prevalence of AVD, with many women avoiding medical care due to misconceptions, financial constraints, and stigma. Poor genital hygiene and risky sexual behaviors, such as inconsistent contraceptive use and unprotected sex, were significant contributors. Although some women had awareness of hygiene practices, many lacked proper education, while cultural and societal factors further influenced behaviors, complicating reproductive health challenges.

In light of these findings, public health authorities, healthcare providers, policymakers, and community organizations should enhance education on genital hygiene and sexual health, ensuring accessibility in both rural and urban areas. Efforts should improve healthcare affordability, address stigma, and promote safer sexual practices. Community-based awareness programs and collaborations with health centers can strengthen knowledge. By integrating education, better healthcare access, and behavioral interventions, AVD prevalence and its complications can be effectively reduced.

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