
Vaginal Hygiene and Pregnancy Outcomes among Antenatal Attendees in Ilorin Metropolis, Kwara State, Nigeria

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Abstract

Maintaining vaginal hygiene during pregnancy is essential for preventing infections and promoting positive pregnancy outcomes. This study examined vaginal hygiene and pregnancy outcomes among antenatal attendees in Ilorin Metropolis, Kwara State, Nigeria. The study adopted a descriptive survey research design. The population comprised 6,100 registered pregnant women attending antenatal clinics between January and December 2023 at primary healthcare facilities in the metropolis. This figure was obtained from the Kwara State Ministry of Health records. A sample of 566 respondents was selected using stratified, purposive, proportionate, and convenience sampling techniques. A researcher-designed questionnaire, validated by experts, was used for data collection. For participants with limited literacy, trained research assistants administered the instrument orally to ensure full participation. The reliability coefficient obtained was 0.86. Data were analyzed using frequency counts, percentages, and ANOVA at a 0.05 significance level. Results revealed that (i) knowledge of vaginal hygiene was generally low, with mean scores below the benchmark of 1.5; (ii) there was a significant difference in knowledge based on age ($F_{(2, 563)} = 5835.56$; $p < 0.05$), with younger women demonstrating higher awareness; and (iii) a significant difference existed based on educational level ($F_{(3, 562)} = 657.33$; $p < 0.05$), with those having higher education showing greater knowledge. The study concluded that age and educational level significantly influence knowledge of vaginal hygiene in the study area. It recommended age-specific and education-sensitive interventions through visual aids, community outreach, and literacy-friendly materials to improve awareness and pregnancy outcomes.

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Keywords: Vaginal hygiene, pregnancy outcomes, knowledge, antenatal attendees, Ilorin Metropolis

Introduction

Vaginal hygiene is a vital component of maternal health because it directly influences pregnancy outcomes and overall reproductive well-being. During pregnancy, physiological changes make women more susceptible to infections; thus, maintaining proper hygiene is essential to prevent complications that can affect both the mother and the fetus (World Health Organization, 2022). Although, several studies have documented the impact of poor vaginal hygiene on pregnancy such as its association with preterm birth, bacterial vaginosis, urinary tract infections, and increased risk of sexually transmitted infections these findings are often discussed in isolation without considering the practical realities faced by women in low-resource settings like Nigeria (Smith et al., 2021).

Practices that constitute good vaginal hygiene include gentle washing with mild soap and water, avoiding douching, wearing breathable cotton underwear, and seeking timely medical advice for abnormal vaginal discharge. These measures are simple but critical in maintaining a balanced vaginal microbiota, which plays a protective role by preventing the growth of harmful bacteria and maintaining an acidic pH environment (Akinyemi et al., 2022). In my view, the real challenge is not only about awareness of these practices but also about access to resources and the cultural beliefs that influence personal hygiene behaviour.

While previous research has linked poor hygiene to adverse pregnancy outcomes, including preterm labor and low birth weight (Lamont et al., 2020), there is a noticeable gap in localized evidence. Much of the existing literature generalizes findings across different contexts, often overlooking variations in education, socioeconomic status, and healthcare accessibility. For example, rural women in Nigeria have been reported to have higher rates of poor hygiene practices than their urban counterparts, likely due to limited access to clean water, health education, and affordable hygiene products (Odetola & Popoola, 2021).

Importantly, this study recognizes that knowledge alone does not automatically translate into practice. Cultural taboos surrounding female reproductive health often discourage open discussions about hygiene, even during antenatal visits. As a result, misinformation may persist despite health campaigns. By investigating the knowledge of vaginal hygiene among pregnant women in Ilorin Metropolis and examining how factors like age and education shape this knowledge, this study aims to provide context-specific insights that could inform targeted health education strategies and policy interventions.

Statement of the Problem

While health education efforts have expanded in recent years, significant knowledge gaps about vaginal hygiene persist among pregnant women, especially in low- and middle-income countries like Nigeria. Inappropriate practices such as frequent douching, use of scented products, and inadequate washing can disrupt the vaginal microbiota, leading to infections like bacterial vaginosis, UTIs, and STIs. These infections increase the risk of preterm birth, low birth weight, and neonatal complications.

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In Nigeria, rural and less-educated women have been found to lack awareness of safe vaginal hygiene, resulting in higher prevalence of infections (Adegbite et al., 2021). Although younger and more educated women may access health information via digital platforms, disparities remain across age and educational groups (Musa et al., 2023).

In Ilorin Metropolis, anecdotal and preliminary evidence suggests many pregnant women are unaware of essential hygiene practices, contributing to preventable maternal and neonatal health challenges. Thus, this study aims to examine knowledge levels of vaginal hygiene and how factors such as age and education influence this knowledge among antenatal attendees in the area.

Purpose of the Study

The purpose of this study was to:

1. investigate the extent to which antenatal attendees in Ilorin Metropolis, Kwara State, are knowledgeable about vaginal hygiene and its influence on pregnancy outcomes.
2. examine whether demographic variables such as age and educational level affect their knowledge.

Research Question

1. To what extent do antenatal attendees in Ilorin Metropolis have knowledge of vaginal hygiene and its effect on pregnancy outcomes?

Research Hypotheses

- H₀₁: There is no significant difference in knowledge of vaginal hygiene among antenatal attendees in Ilorin Metropolis based on educational level.
- H₀₂: There is no significant difference in knowledge of vaginal hygiene among antenatal attendees in Ilorin Metropolis based on age.

Methodology

This study adopted a descriptive survey research design to assess knowledge of vaginal hygiene and its relationship with pregnancy outcomes among antenatal attendees in Ilorin Metropolis, Kwara State, Nigeria. The research population comprised 6,100 pregnant women registered between January and December 2023 in public primary healthcare centers, as documented by the Kwara State Ministry of Health. From this population, a sample of 566 respondents was selected using a multi-stage sampling procedure that combined stratified, purposive, proportionate, and convenience techniques to ensure representativeness across different healthcare facilities.

Data were collected using the “Knowledge of Vaginal Hygiene and Pregnancy Outcomes Questionnaire (KVHPOQ),” which was validated by three experts in health education and maternal health to establish content validity. To accommodate participants with limited literacy, trained research assistants administered the questionnaire orally and recorded responses. The instrument was divided into sections capturing demographic details (such as age and education) and assessing knowledge of vaginal hygiene practices and pregnancy outcomes.

The reliability of the questionnaire was determined through the split-half method, which yielded a reliability coefficient of 0.86, indicating high internal consistency. Data analysis involved the use of descriptive statistics, such as frequencies, percentages, and mean scores, to summarize responses, as well as inferential statistics, specifically

Analysis of Variance (ANOVA), to test the formulated hypotheses at a 0.05 significance level.

Results

Table 1.

Demographic Information

S/N	Variables	Frequency	Percentage
Educational Level			
	Primary	4	.7
	Secondary	482	85.2
	Tertiary	72	12.7
	Non formal	8	1.4
	Total	566	100
Age range			
	< 25	398	70.3
	26-35	138	24.4
	36 and above	30	5.3
	Total	566	100.0

The Table 1 showed the demographic representation of the 566 respondents of educational level and age range. The majority of the respondents were secondary certificate graduates and are youths of age range of less than 25 years. The least were primary school holders and adults of 36 years and above.

Answering of Research Question

Research Question One: Will antenatal attendees have knowledge of vagina hygiene on pregnancy outcomes in Ilorin metropolis, Kwara State?

Table 2.

Frequency, Percentage and Mean on Knowledge of Vagina Hygiene on Pregnancy Outcomes

S/N	Knowledge of Vagina Hygiene on Pregnancy Outcomes	Yes	No	Mean	Decision
1.	Knowledge of vagina care during pregnancy prevents the occurrence of preterm delivery	254 (44.9%)	312 (55.1%)	1.45	Not Significant
2.	Regular wearing of cotton underwear during pregnancy prevents my vagina from vaginal vaginosis (abnormal discharge, itching, or bad odour)	189 (33.4%)	377 (66.6)	1.34	Not Significant
3.	Daily cleaning of the vaginal area using mild soap and water reduces the risk of infections during pregnancy	216 (38.2%)	350 (61.8)	1.38	Not Significant
4.	Avoidance of douching during pregnancy helps to maintain healthy vaginal flora and prevent preterm labor	203 (35.9%)	363 (64.1)	1.35	Not Significant
5.	Regular hydration and maintaining a healthy diet during pregnancy support vaginal health and reduce the risk of infections	229 (40.5%)	377 (59.5)	1.47	Not Significant
6.	Avoiding the use of scented feminine hygiene products helps to prevent vaginal irritation and infections during pregnancy	178 (31.4%)	388 (68.6)	1.32	Not Significant
7.	Practicing safe sex during pregnancy reduces the risk of sexually transmitted infections that can affect vaginal health	195 (34.4%)	371 (65.5)	1.35	Not Significant
8.	Proper perineal hygiene after using the toilet helps to prevent urinary and vaginal infections during pregnancy	208 (36.7%)	358 (63.3)	1.36	Not Significant

9.	Changing sanitary pads or panty liners frequently helps to maintain vaginal hygiene and prevent infections	221 (39.0%)	345 (61.0)	1.43	Not Significant
10.	Seeking medical advice for any unusual vaginal symptoms (such as itching, burning, or abnormal discharge) during pregnancy is essential for preventing complications	199 (35.1%)	367 (64.8)	1.35	Not Significant
Total				13.8	

Average mean = 1.5

The analysis of antenatal attendees' knowledge of vaginal hygiene on pregnancy outcomes, as presented in Table 2, reveals generally low levels of awareness across all measured items. A larger proportion of respondents answered "No" to all statements, indicating limited understanding of key practices that could prevent infections and complications during pregnancy. For instance, only 44.9% agreed that proper vaginal care during pregnancy prevents preterm delivery, while 55.1% disagreed. Similarly, just 33.4% acknowledged the importance of wearing cotton underwear to prevent vaginal infections, and 38.2% agreed that daily cleaning of the vaginal area with mild soap reduces infection risks.

The pattern continues with 35.9% agreeing that avoiding douching helps maintain healthy vaginal flora, while 40.5% supported the role of hydration and diet in vaginal health. Notably, only 31.4% recognized that avoiding scented products prevents irritation, and 34.4% agreed that practicing safe sex reduces the risk of sexually transmitted infections. Also, only 36.7% reported awareness that proper perineal hygiene helps prevent infections, and 39.0% agreed that frequent changing of sanitary pads is vital. Lastly, 35.1% were aware that seeking medical advice for unusual symptoms is essential.

The average mean score of 1.5, with all decisions marked as "Not Significant," indicates that the overall knowledge level of vaginal hygiene among antenatal attendees in Ilorin Metropolis is low.

Hypotheses Testing

H₀₁: There will be no significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin metropolis based on educational level.

Table 3a:

Summary of ANOVA Analysis on Pregnant Women's Knowledge of Vaginal Hygiene Based on Age

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	298,654.18	2	149,327.09	5835.56	0.000	H ₀ is rejected
Within Groups	14,406.70	563	25.58			
Total	313,060.88	565				

The data analysis in Table 3a indicates that of 566 respondents; the summary of the ANOVA analysis shows that there is significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin metropolis based on age ($F_{(2;563)} = 5835.56$; $P < 0.05$). The hypothesis is therefore rejected since the

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significant value is less than the 0.05 level of significance. This implies that there is significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin metropolis based on age.

Table 3b:

Post Hoc Analysis (Tukey HSD) on Knowledge of Vaginal Hygiene based on Age

Comparison	Mean Diff.	p-value	95% CI Lower	95% CI Upper	Decision
<25 vs 26–35	45.88	0.000	44.01	47.74	Significant difference
<25 vs 36 and above	65.01	0.000	61.95	68.07	Significant difference
26–35 vs 36 and above	19.13	0.000	15.93	22.33	Significant difference

The post hoc (Tukey HSD) analysis in Table 3b on the knowledge of vaginal hygiene based on age reveals significant differences among the age groups. There is a significant difference between respondents under 25 years and those aged 26–35 years (mean difference = 45.88, $p < 0.001$), indicating that younger antenatal attendees (<25) have higher knowledge levels compared to those in the 26–35 age group. Similarly, a significant difference exists between respondents under 25 years and those aged 36 and above (mean difference = 65.01, $p < 0.001$), with younger attendees again demonstrating better knowledge.

Furthermore, the comparison between respondents aged 26–35 and those 36 and above also shows a significant difference (mean difference = 19.13, $p < 0.001$), suggesting that knowledge of vaginal hygiene decreases further with age. Overall, this implies that younger antenatal attendees tend to have greater awareness and knowledge of vaginal hygiene in relation to pregnancy outcomes, possibly due to better access to current health information and educational programmes.

H₀₂: There will be no significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin metropolis based on age.

Table 4a:

Summary of ANOVA Analysis on Knowledge of Vaginal Hygiene Based on Educational Level

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	44,575.49	3	14,858.50	657.33	0.000	H ₀ is rejected
Within Groups	12,703.69	562	22.61			
Total	57,279.18	565				

The data analysis in Table 4a indicates that of 566 respondents; the summary of the ANOVA analysis shows that there was no significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin metropolis based on educational level ($F_{(2:563)} = 657.33$; $P < 0.05$). The hypothesis is therefore rejected since the significant value is less than the 0.05 level of significance. This implies that there is significant difference in the knowledge of vaginal hygiene on

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pregnancy outcomes among antenatal attendees in Ilorin metropolis based on educational level.

Table 4b:

Post Hoc (Tukey HSD) Analysis on Knowledge of Vaginal Hygiene Based on Educational Level

Comparison	Mean Difference	p-value	95% CI Lower	95% CI Upper	Decision
Primary vs Secondary	-46.10	0.000	-54.72	-37.48	Significant difference
Primary vs Tertiary	-61.51	0.000	-70.97	-52.06	Significant difference
Primary vs Non-formal	2.48	0.716	-12.32	17.29	No significant difference
Secondary vs Tertiary	-15.41	0.000	-17.99	-12.82	Significant difference
Secondary vs Non-formal	48.58	0.000	36.94	60.22	Significant difference
Tertiary vs Non-formal	63.99	0.000	52.40	75.58	Significant difference

The post hoc (Tukey HSD) analysis in Table 4b reveals antenatal attendees' knowledge of vaginal hygiene based on educational level which shows significant variations across different education categories. There is a significant difference between those with primary education and those with secondary education (mean difference = -46.10, $p < 0.001$), as well as between primary and tertiary education levels (mean difference = -61.51, $p < 0.001$). However, no significant difference was observed between respondents with primary education and those with non-formal education (mean difference = 2.48, $p = 0.716$), suggesting that both groups share similar levels of knowledge.

Additionally, a significant difference exists between respondents with secondary and tertiary education (mean difference = -15.41, $p < 0.001$), indicating that those with tertiary education have better knowledge of vaginal hygiene. There is also a significant difference between secondary and non-formal education groups (mean difference = 48.58, $p < 0.001$), as well as between tertiary and non-formal groups (mean difference = 63.99, $p < 0.001$), further emphasizing that higher educational levels correspond with better knowledge of vaginal hygiene practices. These findings imply that education plays a crucial role in influencing knowledge of vaginal hygiene during pregnancy.

Discussion of Findings

The findings from the research question revealed that antenatal attendees in Ilorin Metropolis have generally low knowledge of vaginal hygiene practices and their impact on pregnancy outcomes. The majority of respondents demonstrated limited awareness of essential practices such as the prevention of preterm delivery through vaginal care, the importance of wearing cotton underwear to prevent vaginosis, the role of daily cleaning with mild soap, avoiding douching, hydration, safe sex, and prompt medical attention for unusual vaginal symptoms. The overall average mean score of 1.5 indicates poor knowledge across all items measured.

These findings align with previous research indicating that inadequate knowledge of vaginal hygiene is common among women in low- and middle-income countries, contributing to preventable pregnancy complications (Kibret et al., 2023). A study by Mohamed et al. (2022) also reported that pregnant women who lack adequate hygiene knowledge are at higher risk of infections that can lead to preterm birth and low birth weight infants.

Furthermore, the low level of awareness regarding safe practices such as avoiding scented feminine products and frequent changing of sanitary pads corroborates findings by Adane et al. (2021), who emphasized that health literacy regarding intimate hygiene during pregnancy remains low in many communities and contributes to maternal and neonatal morbidity.

The findings from hypothesis one reveals that there is a significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin Metropolis based on age. Younger respondents, particularly those under 25 years of age, exhibited higher levels of knowledge compared to older age groups (26–35 years and 36 years and above). This pattern suggests that younger women may have better access to current health education materials, digital platforms, and school-based health programs that emphasize maternal and reproductive health.

This finding aligns with the results of Akintunde et al. (2022), who reported that younger women were more likely to have up-to-date knowledge of reproductive and hygiene-related health due to increased exposure to internet-based health resources and antenatal health education sessions. Similarly, Musa et al. (2023) found that younger pregnant women tend to be more proactive in seeking health information from both social media and healthcare professionals, leading to higher levels of knowledge regarding hygiene practices and pregnancy care.

However, these findings contrast with the report of Gyan et al. (2021), who noted that older pregnant women (aged 30 and above) in some communities demonstrated greater knowledge and adherence to proper hygiene practices due to life experience and prior pregnancies. They argued that repeated antenatal care exposure over multiple pregnancies reinforces knowledge and builds confidence in self-care practices.

The observed decline in knowledge with increasing age in this study could also suggest gaps in continuous health education targeting older women, who may not prioritize updating their health knowledge or may rely on outdated cultural practices (Ogunbiyi et al., 2022). This emphasizes the need for healthcare providers to ensure that health education during antenatal visits is tailored and repeated across all age groups, not just the younger population.

The findings of hypothesis two reveals that there is a significant difference in the knowledge of vaginal hygiene on pregnancy outcomes among antenatal attendees in Ilorin metropolis based on educational level. The post hoc analysis confirmed that respondents with higher educational qualifications, particularly those with tertiary education, demonstrated significantly better knowledge of vaginal hygiene compared to those with secondary, primary, or non-formal education. This suggests that education plays a pivotal role in shaping awareness and understanding of essential maternal health practices.

This finding is consistent with the work of Adebayo et al. (2022), who reported that educational attainment was a strong predictor of maternal health knowledge, as educated women are more likely to access and comprehend health-related information and apply it in their daily hygiene practices. Furthermore, Eze and Okafor (2021) also highlighted that women with tertiary education tend to have more exposure to formal health education programs and digital health platforms, which positively impact their understanding of reproductive and prenatal care.

In contrast, the lack of significant difference between primary and non-formal education groups in this study suggests that minimal education does not necessarily translate to improved knowledge. This is supported by findings from Oladimeji et al. (2020), which reported that women with lower education levels, especially those with only primary schooling or informal learning, often rely on cultural myths and outdated practices rather than evidence-based health information.

Conclusion

This study concluded that vaginal hygiene knowledge among pregnant women in Ilorin Metropolis is inadequate. Respondents showed poor understanding of basic hygiene practices vital for preventing infections and ensuring healthy pregnancy outcomes. The findings confirmed that age and educational level significantly influence knowledge, with younger and more educated women being better informed. These results highlight the necessity of targeted health education strategies to address knowledge disparities and improve maternal and neonatal health outcomes in the region.

Recommendations

Based on the conclusions of the study, it was recommended that:

1. Healthcare providers should intensify education on vaginal hygiene through structured sessions, visual materials, and culturally appropriate messaging tailored to literacy levels.
2. Specific interventions should be developed for older antenatal attendees (36+ years) to update their health knowledge.
3. Educational materials should be adapted for women with little or no formal education, using oral presentations, pictorial guides, and support from community health workers.

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