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Knowledge, Attitude and Practices of Menstrual Health and Hygiene among Adolescent Students in Laaniba Community, Ibadan, Oyo State, Nigeria

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Abstract:

Menstrual health and hygiene (MHH) remains a persistent public health and gender equity concern in low- and middle-income settings, with implications for adolescent girls' wellbeing and schooling. This study assessed the knowledge, attitudes, practices, and influencing factors of menstrual health and hygiene among adolescent female students in Laaniba Community Secondary School, Ibadan. A descriptive cross-sectional design was employed among SS1–SS3 students (N=120). Using the Taro Yamane formula with 10% attrition, a sample of 101 respondents was selected through simple random sampling. Data were collected with a structured questionnaire adapted from Duru et al. (2021) and analyzed using SPSS version 25 with descriptive statistics and Pearson's chi-square at $p<0.05$. Respondents had a mean age of 15.3±1.7 years; menarche commonly occurred at 12–13 years, and most reported regular cycles (86.1%). Although many participants reported understanding the menstrual cycle (82.2%) and over half knew how to track menstruation (59.4%), awareness of menstrual health risks was low (33.7%) and most had not received menstrual health education (83.2%). Overall knowledge was predominantly poor (74.26%). Attitudes were moderately positive, with low reported embarrassment (11.9%) and minimal school absenteeism (10.9%); 51.49% demonstrated positive attitudes. Practices were generally favorable: 95.0% used sanitary pads and 86.1% reported consistent hand hygiene, with 62.4% categorized as having good practices; however, disposal methods were suboptimal (45.6% burning; 27.7% flushing). Chi-square analysis showed no significant association between academic class and knowledge ($p=0.8992$), but a significant association between academic department and good practice ($p=0.001$). The study underscores the need for comprehensive school-based menstrual education and improved disposal

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Introduction

Menstrual health and hygiene (MHH) remains a significant global public health and gender equity concern, particularly in low- and middle-income countries (LMICs). It is estimated that about 2.3 billion girls and women worldwide lack adequate menstrual hygiene management due to limited facilities, high costs of sanitary products, and persistent knowledge gaps (Demmu et al., 2023). These constraints often compel girls to rely on improvised and unhygienic materials such as old cloths, which heighten the risk of infections and other reproductive health complications. Empirical evidence consistently highlights that many adolescent girls struggle to obtain clean menstrual materials, find private spaces for changing, and dispose of used products safely. Compounding these challenges is a general lack of accurate understanding of the menstrual cycle (Finlay, et al, 2020).

Menstrual health literacy is particularly critical during adolescence, the life stage when most girls experience menarche and begin to navigate menstruation independently. However, in many LMICs, girls enter puberty with inadequate or misleading sexual and reproductive health information, leaving them poorly prepared for menstruation (Baird et al., 2022). Cultural taboos and stigma surrounding menstruation further reinforce silence, misinformation, and feelings of shame. These sociocultural barriers perpetuate discomfort and fear, limiting open discussion and access to reliable information (Lawal, et al, 2020). Physiologically, menstruation is a normal biological process marking the onset of reproductive maturity. The average adolescent girl menstruates for about three to five days each month from menarche until menopause (Sontyo et al., 2023). Menarche, the first menstrual experience typically occurs during puberty and adolescence and usually lasts between two and seven days (Ogunleye & Kio, 2020). Beyond the biological process, menstrual health is defined as a state of complete physical, mental, and social well-being in relation to the menstrual cycle (Hennegan et al., 2021). Contemporary perspectives emphasise that menstrual health and hygiene extend beyond individual practices to include systemic factors such as gender equality, education, empowerment, and human rights (UNICEF, 2019). Proper menstrual hygiene management entails the use of clean absorbent materials, regular changing in privacy, adequate washing with soap and water, and safe disposal of used products (Appiah-Agyekum et al., 2025).

Despite growing global attention, period poverty remains widespread. Period poverty refers to the lack of access to menstrual education, water and sanitation facilities, hygienic products, and supportive environments (Sanchez & Rodriguez, 2021). In India, for example, approximately 23 million girls reportedly drop out of school after menarche, often due to inadequate facilities and menstrual-related challenges (Bali et al., 2020). Globally, an estimated 500 million women and girls lack adequate menstrual hygiene facilities (World Bank, 2020). In Sub-Saharan Africa, fewer than 11% of schools provide menstrual materials or appropriate disposal facilities (WHO, 2024). In Nigeria, about one-quarter of children lack access to private spaces for sanitation and menstrual management (Agbede & Ekeanyanwu, 2021).

Multiple intersecting factors shape menstrual hygiene knowledge and practices. Social, cultural, and economic constraints including the high cost of sanitary pads, inadequate water, sanitation and hygiene (WASH) infrastructure, and limited availability of gender-sensitive toilets significantly hinder effective menstrual management (McCammon et al., 2020). In many LMIC contexts, cultural norms, religious beliefs, educational status, and household

income further influence girls' experiences (Holmes et al., 2021). Where supportive WASH infrastructure is absent, girls are more likely to adopt unsafe coping strategies.

Effective menstrual hygiene management is essential for promoting adolescent girls' physical health, emotional well-being, and social development (Onubogu et al., 2024). Poor menstrual hygiene practices are associated with urinary and reproductive tract infections, which may have long-term consequences including infertility and complications during childbirth (Chinomso et al., 2022). While many developed countries have made significant progress in MHH provision, substantial gaps persist in resource-constrained settings, where menstrual health remains insufficiently prioritised in public health programming (Atari, et al, 2021). Limited knowledge about puberty and menstruation continues to leave many girls feeling insecure, ashamed, and ill-equipped to manage their periods (Folaranmi, et al, 2021). The situation is particularly concerning in rural and underserved school environments. Many schools in LMICs lack girl-friendly WASH facilities, exposing students to unhygienic menstrual practices (Asumah et al., 2022). In Nigeria, menstrual hygiene among adolescents remains inadequately addressed, contributing to increased vulnerability to reproductive tract infections and other health complications linked to unsafe menstrual practices (Holmes et al., 2021). Moreover, existing research has disproportionately focused on urban populations, leaving important evidence gaps regarding rural communities.

Recent national estimates indicate that about 27 million Nigerian women and girls cannot afford or access sanitary pads. Additionally, 57% of girls reportedly have insufficient menstrual health knowledge, while 25% of women lack adequate privacy during menstruation management (Abujah, 2025). Misconceptions remain common, with some adolescents interpreting menstruation as an illness or source of embarrassment that must be concealed (Obande-Ogbuinya et al., 2022). Deep-rooted myths and taboos in many societies continue to label menstruating girls as unclean, thereby reinforcing silence and stigma. Failure to meet girls' informational and material needs can lead to reproductive tract infections, pelvic inflammatory disease, sexually transmitted infections, unpleasant odour, and psychosocial distress (Sontyp et al., 2022).

Menstrual ignorance can also contribute to humiliation, social isolation, and poor hygiene behaviours. Evidence suggests that many young women lack a clear understanding of menstruation and pubertal changes (Long et al., 2022). Consequently, adolescents face heightened risks of skin irritation, reproductive infections, and psychosocial stress when menstrual knowledge and practices are inadequate (Panda et al., 2024). These challenges have broader implications for school attendance, classroom participation, and mental health outcomes (Kumbeni et al., 2021). Although awareness of menstruation as a concept may be widespread among schoolgirls in LMICs, comprehensive and functional knowledge often remains limited (Michael et al., 2020).

Empirical evidence indicates mixed levels of menstrual health knowledge among adolescents across different contexts. In Ibadan, Nigeria, Folaranmi, et al (2021) reported that although 77.4% of adolescent female apprentices were aware of menstruation before menarche, only 50.8% demonstrated good knowledge. Specific gaps were evident, as just 22.6% correctly identified the uterus as the source of menstrual blood, and 55.5% were unaware of the normal menstrual cycle length. Similarly, Duru, et al (2021) found that 77.9% of schoolgirls in Umunna, Imo State had premenarchal knowledge, with mothers (68.8%) serving as the primary information source. In contrast, Tamima et al. (2025) reported that more than half of

in-school adolescent girls in rural Bangladesh possessed good menstrual hygiene knowledge. However, Kiza et al. (2025) documented a substantial knowledge gap in Kisangani: despite 91.5% receiving information prior to menarche and 70.2% attending menstrual hygiene courses, only 11.0% demonstrated good knowledge and just 12.3% practiced good hygiene. Among orphaned and vulnerable adolescents in Lagos State, Sontyo et al. (2023) observed high premenarchal awareness (92%), again with mothers as the first information source for most participants (62.7%).

Attitudinal findings reveal considerable variability but generally indicate persistent negative perceptions. Chinomso et al. (2023), in a Nigerian systematic review, reported that about 70.3% of adolescents exhibited negative attitudes toward menstruation. Conversely, Fernando and Jayawardana (2022) found that 67.2% of Grade 10 schoolgirls in Sri Lanka demonstrated satisfactory attitudes, although 82.7% still showed unsatisfactory essential practices. Khatoon et al. (2023) further illustrated emotional responses to menarche in Lucknow, where 40.2% of girls felt depressed, 33.60% felt scared, and 21.4% perceived menstruation as sinful. Although 58.4% anticipated the onset of menstruation and 87.40% understood the importance of hygiene, 82% considered menstruation bothersome and 62.60% experienced activity restrictions during their periods.

Practice patterns remain inconsistent across settings. Tamima et al. (2025) reported that only 28.6% of girls in rural Bangladesh demonstrated good menstrual hygiene practices, and a mere 1.6% disposed of used napkins in dustbins. In Imo State, Nigeria, Duru, et al (2021) found that 56.3% used sanitary pads while 31.2% relied on cloth. Most respondents changed absorbents twice or less daily (77.4%), bathed at least twice daily (77.4%), and 50.2% washed the vulvoperineal area with soap and water. Disposal methods included burning (51.9%) and refuse dumps (26.0%), while 48.1% practiced handwashing before and after changing materials. More encouraging findings were reported by Sontyo et al. (2023), where 88.5% used sanitary pads and 94.5% demonstrated good WASH-related practices. In the Niger Delta, Fajola et al. (2023) observed that 62.5% practiced good hygiene, although 57.6% reported washing and reusing materials, and 43% disposed of pads in toilets. Khatoon et al. (2023) similarly found that 51.40% used old cloth while 48.60% used sanitary pads; 37.60% changed materials five times daily, 61.50% used dustbins for disposal, and 81.60% bathed regularly during menstruation.

Several structural and socio-cultural factors influence menstrual hygiene behaviours. Folaranmi, et al (2021) identified lack of private washing spaces, inadequate disposal facilities, and absence of menstrual education sessions as key barriers. Tshivule et al. (2025) similarly emphasised the roles of sociocultural and religious norms, alongside resource constraints such as the cost and availability of menstrual supplies and WASH infrastructure in rural schools. Tshomo et al. (2021) reported facility-related barriers among female college students in Bhutan, including water shortages (21.3%), lack of soap (80.1%), absence of disposal bins (24.1%), and missing door locks in 33.7% of hostel toilets. Fernando and Jayawardana (2022) further noted that lower maternal education, school type, lack of premenarchal awareness, and inadequate school-based menstrual information were significantly associated with poor knowledge, attitudes, and practices. Collectively, the evidence underscores the multidimensional determinants of menstrual hygiene outcomes among adolescents.

Given these persistent gaps, there is a compelling need for context-specific evidence to inform interventions. Therefore, this study seeks to assess the knowledge, attitudes, and practices of menstrual health and hygiene among adolescent students in Laaniba Community, Ibadan. Findings from the study are expected to guide health professionals, educators, and policymakers in designing targeted, culturally appropriate strategies to improve menstrual health outcomes and support adolescent girls' well-being and educational participation.

This research study aims to assess the knowledge, attitude and practice of menstrual health and hygiene among adolescent students. The specific objectives of this study are to

1 assess the knowledge of menstrual health and hygiene among adolescent students in Laniba community, Ibadan;
2 determine the attitudes towards menstrual health and hygiene among adolescent students in the Laniba community, Ibadan;
3 investigate the practice of menstrual hygiene among adolescent students in Laaniba community, Ibadan; and
4 determine the factors influencing the practice of menstrual health and hygiene among adolescents in Laaniba community, Ibadan.

Two research hypotheses were raised for the study:

Ho1: There is no significant association between the knowledge of menstrual health and hygiene and the department of the adolescent students in Laaniba community Ibadan.

Ho2: There is no significant association between the educational level of the adolescents and the practice of good menstrual hygiene.

Research Methods

A cross-sectional descriptive research design was adopted to assess the knowledge, attitude, and practices of menstrual health and hygiene among adolescent students in Laaniba Community Secondary School, Ibadan. The target and study populations comprised adolescent female students enrolled in SS1–SS3 in the school, with a total population of 120 students. Eligibility for participation was determined using clearly defined criteria. Included were adolescent students aged 10 years and above who were currently enrolled in Laaniba Community Secondary School and who provided informed consent. Students who declined consent and those who were psychologically challenged and unable to comprehend the purpose of the study were excluded. This approach ensured that only respondents capable of providing valid and reliable information were recruited into the study.

The sample size was determined using the Taro Yamane (1967) formula for finite populations. With a study population (N) of 120 and a margin of error (e) of 0.05, the calculated sample size was 92. To accommodate potential non-response and attrition, an additional 10% (9.2 ≈ 9) was added, resulting in a final sample size of 101 respondents. A simple random sampling technique was employed to ensure that every eligible adolescent female student had an equal probability of selection. The students' enrolment register served as the sampling frame, and each eligible student was assigned a unique identification number. These numbers were written on slips of paper, thoroughly mixed, and randomly drawn without replacement until the required sample size was achieved. This procedure enhanced objectivity, minimized selection bias, and improved the representativeness and generalizability of the findings within the study setting.

Data were collected using a standardized, structured questionnaire adapted from Duru et al. (2021). The instrument comprised multiple sections designed to capture key study variables.

Section A obtained demographic information of respondents, while Section B assessed knowledge of menstrual health and hygiene. Section C measured respondents' attitudes toward menstrual health and hygiene, focusing on menstrual experiences among the students. Section D evaluated menstrual hygiene practices, and Section E explored factors influencing these practices, including barriers and access to menstrual resources. The reliability of the instrument was established through a pretest conducted among adolescent female students at the International School, Ibadan. Following necessary revisions based on feedback, internal consistency was assessed using Cronbach's alpha, yielding a coefficient of 0.87, indicating good reliability for the study.

Formal approval was obtained from the school principal and management prior to data collection. The researcher introduced the study and explained the questionnaire to participants with the assistance of class teachers. A total of 101 questionnaires were administered and retrieved immediately with the support of a research assistant to prevent loss. Data collection was completed within two days and scheduled during the students' break period to avoid disruption of academic activities. Ethical standards were strictly observed, including voluntary informed consent, assurance of confidentiality through the use of unique codes instead of names, and secure storage of both paper and electronic data. Participants were informed of their right to withdraw at any time without penalty. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize findings, while Pearson's Chi-square test was employed to test the study hypotheses at a 0.05 level of significance.

Results

Table 1 presents the sociodemographic characteristics of the adolescent female students who participated in the study. The age distribution shows that respondents were between 12 and 18 years, with a mean age of 15.3 ± 1.7 years. The highest proportion of respondents were aged 15 years (28; 27.7%), followed by those aged 14 years (25; 24.8%) and 16 years (21; 20.8%), indicating that most participants were in mid-adolescence. In terms of educational level, more than half of the respondents 51 (50.5%) were in Senior Secondary School 1 (SS1), while 37 (36.6%) were in SS2 and 13 (12.9%) were in SS3. This suggests that the majority of respondents were in the lower classes of senior secondary school.

Table 1: Sociodemographic Characteristics (n=101)

Variables	Frequency	Percentage (%)
Age as at last birthday		Mean age:
12	6	15.3±1.7years
13	2	5.9
14	21	2.0
15	28	20.8
16	25	27.7
17	11	24.8
18	8	10.9
		7.9
Educational Level		
SS1	51	50.5
SS2	37	36.6

SS3	13	12.9
Department		
Art	29	28.9
Science	61	60.3
Social Science	11	10.8

Table 2 shows the menstrual experiences of the respondents. The age at menarche ranged from 10 to 16 years, with most respondents reporting menarche at 13 years (24; 23.8%) and 12 years (23; 22.8%), indicating that menarche commonly occurred during early adolescence. The majority of respondents 87 (86.1%) reported having a regular menstrual cycle, while 14 (13.9%) experienced irregular menstruation. In terms of duration of menstruation, about half of the respondents 51 (50.5%) reported bleeding for less than three days, while 37 (36.6%) menstruated for 3–5 days, and 13 (12.9%) experienced menstruation lasting more than five days.

Table 2: Menstrual Experience (n=101)

Variables	Frequency	Percentage (%)
Age of menarche		
10	4	4.0
11	12	11.9
12	23	22.8
13	24	23.8
14	19	18.8
15	15	14.9
16	4	4.0
Frequency of menstruation		
Regular	87	86.1
Irregular	14	13.9
Duration of menstruation		
Less than 3days	51	50.5
3-5days	37	36.6
More than 5days	13	12.9
Menstrual flow		
Light	20	19.8
Medium	67	66.3
Heavy	14	13.9
Experience menstrual cramps/pain		
Yes	81	80.2
No	20	19.8

Table 3 presents the level of knowledge of menstrual health and hygiene among the respondents. The findings indicate that most respondents 83 (82.2%) reported understanding the menstrual cycle, while 18 (17.8%) did not. More than half of the respondents 60 (59.4%) knew how to track their menstruation, while 41 (40.6%) lacked this knowledge. Awareness of menstrual health risks was relatively low, with 67 (66.3%) reporting not being aware of risks such as infections and infertility, while 34 (33.7%) were

aware. Furthermore, a large proportion of respondents 84 (83.2%) reported not to have received menstrual health education, while 17 (16.8%) had received any form of menstrual health education.

Table 3: Knowledge of menstrual health and hygiene among adolescents students

ITEM	Information	ƒ (%)
Understand menstrual cycle:	Yes	83(82.2)
	No	18(17.8)
Know how to track menstruation	Yes	60(59.4)
	No	41(40.6)
Aware of menstrual health risks	Yes	34(33.7)
(e.g., infections, infertility):	No	67(66.3)
Received menstrual health	Yes	17(16.8)
education	No	84(83.2)

Figure 1 below illustrates the summary of the Knowledge of menstrual health and hygiene among adolescent students. The assessment consisted of 4 knowledge-based questions structured in a Yes and No format. The scale is scored as follows: correct response as 1, while incorrect as 0. The obtainable score ranges from 0 to 4. The results showed a minimum score of 0 and a maximum score of 4 obtained, with a mean score of 3.1 ± 0.3. Scores below the mean score were categorized as poor knowledge, while scores above the mean were categorized as good knowledge. The chart shows that majority 75(74.26%) have poor knowledge of menstrual health and hygiene among the students.

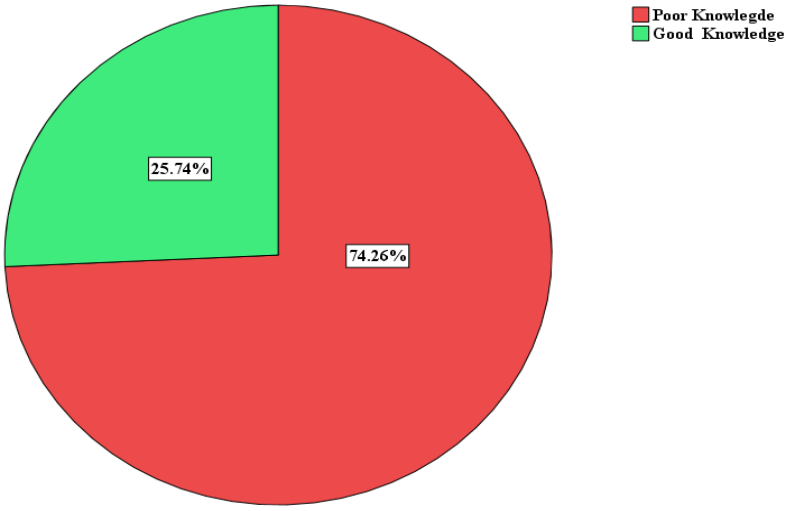

Fig. 1: Pie Chart showing the summary of the Knowledge of menstrual health and hygiene

Table 4 shows the attitudes of respondents towards menstrual health and hygiene. About one-third of the respondents 33 (32.7%) reported experiencing difficulty accessing sanitary products, while 68 (67.3%) did not have such difficulties. A small proportion of respondents 16 (15.8%) reported experiencing menstrual-related health issues, such as infections or unpleasant odor, whereas the majority 85 (84.2%) did not experience such problems. Only 12 (11.9%) of respondents reported feeling embarrassed or ashamed about menstruation, while

most 89 (88.1%) did not feel embarrassed. Similarly, 11 (10.9%) reported missing school due to menstruation, whereas the majority 90 (89.1%) did not miss school because of menstrual issues.

Table 4: Attitudes towards menstrual health and hygiene among adolescents students

ITEM	(Strongly Agree + Agree) ƒ (%)	(Neutral + Disagree + Strongly Disagree) ƒ (%)
Difficulty accessing sanitary products	33(32.7)	68(67.3)
Experience menstrual-related health issues (e.g., infections, odor)	16(15.8)	85(84.2)
Feel embarrassed/ashamed about menstruation	12(11.9)	89(88.1)
Miss school/work due to menstruation	11(10.9)	90(89.1)

Figure 2 below illustrates the summary of the attitudes towards menstrual health and hygiene among adolescents students. The assessment consisted of 4 attitude-based questions structured in a five-point Likert scale. The obtainable score ranges from 1 to 16. The results showed a minimum score of 3 and a maximum score of 15 obtained, with a mean score of 8.7 ± 2.3. Scores below the mean score were categorized as negative attitude and scores above the mean scores were categorized as positive attitude. The chart shows that slightly above average 52(51.49%) of the students showed positive attitude towards menstrual health and hygiene among adolescents students

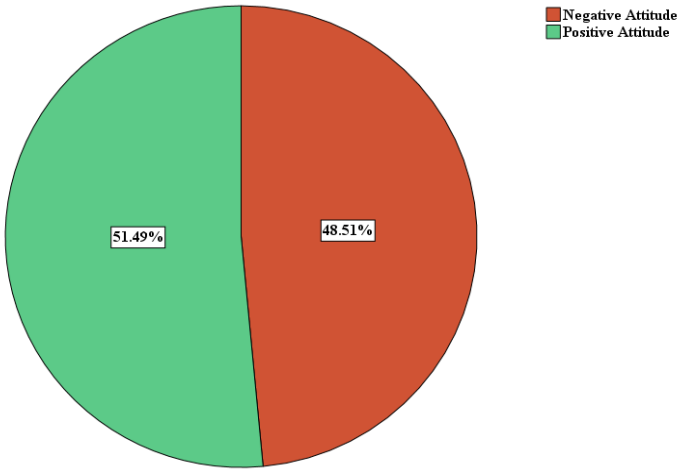

Fig 2: Pie chart showing the summary of the attitudes towards menstrual health and hygiene

Table 5 presents the practices of menstrual hygiene among the respondents. The findings reveal that the majority of respondents 96 (95.0%) used sanitary pads as their primary menstrual hygiene product. Very few respondents reported the use of tampons 2 (2.0%) or menstrual cups 3 (3.0%), while none reported using cloth pads or other materials. Regarding

the frequency of changing sanitary products, most respondents 85 (84.2%) changed their sanitary products less than four times a day, while 12 (11.9%) changed them 4–6 times daily, and only 4 (4.0%) changed them more than six times per day. In terms of disposal methods, 46 (45.6%) reported burning used sanitary products, 28 (27.7%) flushed them down the toilet, while 27 (26.7%) wrapped and disposed of them in trash bins. Hand hygiene practices were generally good, as the majority of respondents 87 (86.1%) reported always washing their hands after using the toilet during menstruation, while 8 (7.9%) did so most of the time and 6 (5.9%) sometimes washed their hands.

Table 5: Practice of menstrual hygiene among adolescents students

ITEM	Information	ƒ (%)
Primary menstrual hygiene product used	Sanitary pads	96(95.0)
	Tampons	2(2.0)
	Menstrual cups	3(3.0)
	Cloth pads	0(0)
	Other	0(0)
Frequency of changing sanitary products	Less than 4 times	85(84.2)
	4-6 times	12(11.9)
	More than 6 times a day	4(4.0)
Method of disposing sanitary products	Wrap and throw in trash	27(26.7)
	Flush down the toilet	28(27.7)
	Burn	46(45.6)
How often do you wash your hands after using the toilet during menstruation	Always	87(86.1)
	Most of the time	8(7.9)
	Sometimes	6(5.9)
	Rarely	0(0)

Figure 3 below illustrates the summary of the practice of menstrual hygiene among adolescents students. The assessment consisted of 4 practice-based questions structured in a Yes and No format. The scale is scored as follows: correct response as 1, while incorrect as 0. The obtainable score ranges from 0 to 4. The results showed a minimum score of 0 and a maximum score of 4 obtained, with a mean score of 3.3 ± 0.7. Scores below the mean score were categorized as poor practice, while scores above the mean were categorized as good practice. The chart shows that more than half 63(62.4%) have practice of menstrual hygiene.

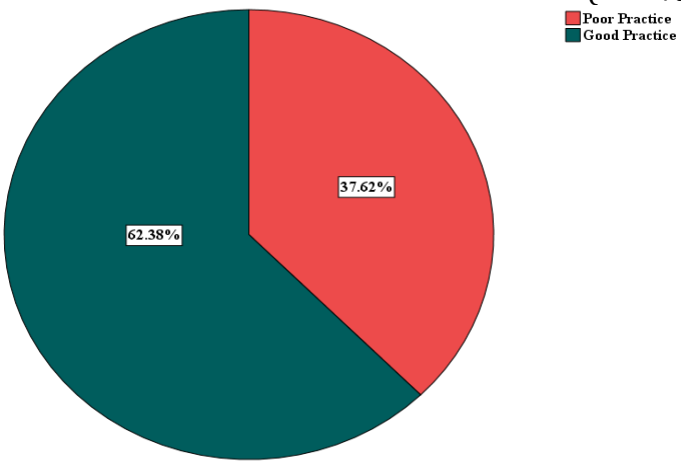

Fig 3: Pie chart showing the summary of the practice of menstrual hygiene

Table 6 shows factors influencing the practice of menstrual health and hygiene among the respondents. Most respondents reported easy access to sanitary products, while 24.8% reported difficulty and 4.0% reported very difficult access. Access to menstrual health information was generally good, with 74 (73.3%) reporting easy access, while 19 (18.8%) and 8 (7.9%) reported difficult and very difficult access, respectively. Similarly, access to healthcare services for menstrual-related issues was reported as easy by 68 (67.3%) of respondents, while 14 (13.9%) and 19 (18.8%) reported difficult and very difficult access, respectively. Overall, the findings suggest that access to resources, information, and healthcare services plays a significant role in influencing menstrual hygiene practices among adolescent students.

Table 6: Factors influencing the practice of menstrual health and hygiene among adolescents

ITEM	Information	ƒ (%)
Do you have access to sanitary products?	Easy	71.3
	Difficult	24.8
	Very Difficult	4.0
Do you have access to sanitary products? Easy	Easy	74(73.3)
	Difficult	19(18.8)
Do you have access to menstrual health information?	Very Difficult	8(7.9)
Access to healthcare services for menstrual issues:	Easy	68(67.3)
	Difficult	14(13.9)
	Very Difficult	19(18.8)

Test of Hypotheses

Ho1: There is no significant association between the knowledge of menstrual health and hygiene and the academic class of the adolescents in Laaniba community Ibadan.

The chi-square analysis showed no statistically significant association between adolescents' academic class and their knowledge of menstrual health and hygiene ($\chi^2 = 0.2125$, df = 2, p = 0.8992). This indicates that the level of academic class (SS1, SS2, or SS3) did not significantly influence the knowledge of menstrual health and hygiene among the adolescents. Although more respondents across all classes demonstrated good knowledge compared to poor knowledge, these differences were not statistically meaningful. Therefore, the null hypothesis was not rejected, and it can be concluded that there is no significant association between academic class and knowledge of menstrual health and hygiene among adolescents in Laaniba Community, Ibadan.

Table 7: Chi-square Cross Tabulation between the knowledge of menstrual health and hygiene and the academic class

Academic Class	Knowledge of menstrual health and hygiene		Chi-square	df	p-value	Remark	Decision
	Poor knowledge	Good knowledge					
SS1	13	38	0.2125	2	0.8992	Not Significant	Ho failed

SS2	9	28		to be
SS3	4	9		rejected
Total	26	75		

Ho2: There is no significant association between the academic department of the adolescents and the practice of good menstrual hygiene

The chi-square result revealed a statistically significant association between the academic department of the adolescents and the practice of good menstrual hygiene (χ^2 = 21.1623, df = 2, p = 0.001). This finding suggests that the academic department significantly influenced menstrual hygiene practices among the adolescents. Respondents in the science department demonstrated a higher level of good menstrual hygiene practice compared to those in the arts and social science departments. Consequently, the null hypothesis was rejected, and it can be concluded that there is a significant association between academic department and the practice of good menstrual hygiene among adolescents in Laaniba Community, Ibadan.

Table 8: Chi-square Cross Tabulation between the academic department of the adolescents and the practice of good menstrual hygiene

Academic department	Practice of good menstrual hygiene		Chi-square	df	p-value	Remark	Decision
	Poor practice	Good practice					
Art	19	10	21.1623	2	0.001	Significant	Ho to be
Science	12	49					rejected
Social Science	7	4					
Total	38	63					

Discussion of Findings

The menstrual experience of respondents in the present study supports the suitability and representativeness of the study population. The reported age at menarche falls within the expected biological range for adolescent girls and is consistent with earlier findings in Nigeria and similar contexts. For example, Folaranmi, et al (2021) documented that menarche commonly occurs in early adolescence, while Sontyo et al. (2023) similarly observed that most adolescents in Lagos State attained menarche during their early teenage years. The predominance of regular menstrual cycles among respondents further suggests that most participants had progressed beyond the initial post-menarche years when irregularity is more typical, thereby enabling more stable hygiene routines; this pattern aligns with the findings of Duru, et al (2021). In addition, the observed duration of menstruation corresponds with physiological norms and mirrors results reported by Khatoon et al. (2023) and Tamima et al. (2025), indicating that the respondents' menstrual profiles are neither atypical nor extreme. Overall, the menstrual experience characteristics of the participants provide a credible experiential basis for examining menstrual hygiene knowledge, attitudes, and practices within the study population

The study found that the overall level of menstrual health and hygiene knowledge among adolescent students in Laaniba community was largely inadequate. Although many respondents demonstrated basic awareness of menstruation, this superficial familiarity did not translate into comprehensive understanding of menstrual physiology, hygiene

requirements, or related health risks. The findings suggest that mere exposure to the concept of menstruation does not guarantee functional knowledge needed for effective menstrual self-care. This pattern supports earlier evidence by Folaranmi, et al (2021), who similarly reported that despite widespread awareness, only a minority of adolescents possessed good menstrual knowledge, with notable misconceptions about menstrual blood origin and cycle length. The study further revealed weak knowledge regarding menstrual tracking and low awareness of potential menstrual health risks such as infections and fertility complications. While Duru, et al (2021) noted that many adolescents received pre-menarche information mainly from mothers, the present findings indicate that the depth and quality of such informal education may be insufficient. Consistent with Kiza et al. (2025), the results highlight a gap between exposure to information and meaningful comprehension. The limited exposure to formal menstrual education observed in this study, compared with reports by Sontyo et al. (2023) and Tamima et al. (2025), underscores the need for structured, school-based menstrual health programmes that move beyond awareness to practical competence and risk recognition.

The findings showed that adolescents in Laaniba community generally exhibited moderately positive attitudes toward menstruation. Most respondents did not report significant shame, embarrassment, or school absenteeism during menstruation, suggesting a gradual normalization of menstrual discourse within the community. This is an encouraging development and contrasts with the systematic review by Chinomso et al. (2023), which documented predominantly negative menstrual attitudes among Nigerian adolescents. The observed difference may reflect localized improvements in awareness, peer support, or evolving generational perspectives within the study setting. However, the findings align more closely with Fernando and Jayawardana (2022), who reported satisfactory attitudes among schoolgirls despite persistent practice gaps. This reinforces the notion that positive perceptions alone do not automatically produce optimal hygiene behaviours. The relatively low embarrassment levels in the current study also differ from Khatoon et al. (2023), who reported higher emotional distress among adolescents in India, highlighting the strong influence of sociocultural context. Nonetheless, the presence of minor menstrual discomforts among some respondents similar to observations by Tamima et al. (2025) indicates that favourable attitudes must be complemented by improved knowledge and resources to achieve optimal menstrual health outcomes.

Menstrual hygiene practices among the adolescents were generally above average, characterized by widespread use of sanitary pads and relatively consistent hand hygiene behaviours. These patterns suggest improved access to commercial menstrual products within the community and reflect encouraging behavioural trends. The findings are consistent with Sontyo et al. (2023), who reported high sanitary pad usage and good WASH practices among adolescents in Lagos State. They also align partly with Duru, et al (2021), although the reduced reliance on cloth materials in the present study may indicate improving socioeconomic conditions or better product availability. Despite these positive indicators, disposal practices remain a concern. Reports of burning or flushing menstrual materials mirror findings by Duru, et al (2021) and Fajola et al. (2023), pointing to systemic gaps in waste management infrastructure and menstrual education. While good hand hygiene practices suggest that the presence of basic WASH facilities supports healthy behaviour as emphasized by Sontyo et al. (2023), the persistence of unsafe disposal methods indicates

incomplete menstrual hygiene education. Overall, the practices observed are favourable but still vulnerable to infrastructural and educational limitations.

The study identified access to sanitary products, menstrual health information, and healthcare services as major determinants of menstrual hygiene practices among adolescents. Participants who reported easier access to these resources demonstrated better hygiene behaviours, underscoring the importance of enabling environments. This finding is consistent with Folaranmi, et al. (2021), who identified lack of facilities and menstrual education as key barriers, and with Tshivule et al. (2025), who emphasized the combined influence of resource availability, WASH infrastructure, and sociocultural factors in African rural schools. Furthermore, the role of healthcare access observed in the study aligns with Fernando and Jayawardana (2022), who highlighted the importance of supportive school environments and information access. In contrast, Tshomo et al. (2021) showed how deficiencies in basic amenities such as water, soap, and disposal bins undermine menstrual hygiene behaviours. Collectively, these findings reinforce that menstrual health outcomes are shaped not only by individual knowledge and attitudes but also by systemic and environmental conditions. Effective improvement therefore requires coordinated interventions involving schools, healthcare systems, and community infrastructure.

The findings of the current study revealed no significant association between adolescents' academic class and their knowledge of menstrual health and hygiene. This indicates that progression through academic levels did not significantly improve menstrual health knowledge. This finding suggests that menstrual health education is not systematically integrated into the school curriculum across academic classes. It supports observations by Folaranmi, et al (2021), who noted persistent knowledge gaps despite educational exposure. The implication is that without structured and age-appropriate menstrual health education, advancement in school level alone is insufficient to enhance knowledge.

In contrast, the second hypothesis revealed a significant association between academic department and menstrual hygiene practices, with students in science-related departments demonstrating better practices than their counterparts in arts and social science departments. This finding suggests that exposure to scientific subjects may enhance health literacy and promote evidence-based health behaviors. Although limited menstrual-specific studies have examined academic discipline, similar patterns have been observed in health-related knowledge domains, where scientific training is associated with better health practices.

Conclusion

The study concludes that while adolescent students in Laaniba community demonstrate relatively positive attitudes and fair menstrual hygiene practices, their knowledge of menstrual health and hygiene remains inadequate. This disconnect poses potential risks to their reproductive health and overall well-being. Menstrual health outcomes among adolescents are strongly influenced by access to resources, healthcare services, and quality health education rather than school progression alone.

Recommendations

1 Nurses and other healthcare providers should conduct regular menstrual health education sessions, provide counseling, and ensure access to affordable sanitary products. Outreach programs linking healthcare institutions with secondary schools should be strengthened to improve service utilization.

2 The Ministry of Education should ensure the systematic integration of comprehensive menstrual health education into the secondary school curriculum across all academic classes and departments. Policies should also support the provision of water, sanitation, and hygiene facilities in schools.

3 Mass media organizations should be encouraged to promote accurate and culturally appropriate information on menstrual health through radio, television, and digital platforms.

4 School management should create supportive environments for menstruating students by ensuring access to clean water, private toilets, disposal facilities, and emergency sanitary products. Schools should collaborate with healthcare professionals, particularly nurses, to organize regular menstrual health education programs and establish clear referral pathways for students with menstrual health concerns.

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