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## Original Research Article

# Knowledge, attitude and perception of menstruation and menstrual hygiene among secondary school students in a semi-urban area in South-South Nigeria

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## ABSTRACT

**Background:** Menstrual health is an important aspect of adolescent reproductive health. However, inadequate knowledge, negative attitudes and barriers to menstrual hygiene management remain concerns, particularly among students with disabilities. This study assessed menstrual knowledge, attitudes and hygiene practices among female students attending an inclusive secondary school in Benin City, Nigeria.

**Methods:** A descriptive cross-sectional study was conducted among 269 female students at Ihogbe College, Benin City, between June and July 2025. Participants were selected using stratified sampling. Data were collected using a semi-structured questionnaire and analysed using SPSS version 25. Associations were assessed using Chi-square and Fisher's exact tests, with statistical significance set at  $p < 0.05$ .

**Results:** The mean age was  $15.4 \pm 2.5$  years, and 26 participants (9.7%) had disabilities. Overall, 63.2% demonstrated good menstrual knowledge, while 81.0% had good menstrual hygiene practices. Feelings of shame and insecurity during menstruation were reported by 34.6% and 48.7%, respectively. Sanitary pads were used by 96.7% of participants, although 36.1% delayed changing menstrual materials until returning home. Good hygiene practice was significantly associated with menstrual knowledge ( $p < 0.001$ ) and disability status ( $p = 0.032$ ).

**Conclusions:** Although menstrual hygiene practices were generally good, knowledge gaps and negative attitudes persisted. School-based menstrual education and disability-inclusive hygiene support may improve menstrual health experiences among students.

**Keywords:** Adolescents, Disability, Menstrual hygiene, Menstrual knowledge, Menstruation

## INTRODUCTION

Menstruation is a normal, cyclical physiological process occurring at puberty and is a sign of reproductive capability in adolescent girls.<sup>1</sup> Despite its biological universality, menstruation continues to be a topic

surrounded by myths, misinformation, silence, and stigma, particularly in many low- and middle-income countries, including Nigeria.<sup>2</sup> For many adolescents, particularly girls in public schools across rural and urban areas, the experience of menarche is often met with anxiety, shame, low self-esteem and confusion due to inadequate

knowledge, myths, and negative cultural attitudes about menstruation.<sup>3</sup>

Globally, menstrual health has gained increasing attention as a critical component of adolescent sexual and reproductive health.<sup>4</sup> However, in Nigeria, challenges persist in integrating menstrual hygiene (MH) management into mainstream health and education systems.<sup>5</sup> Poor knowledge about menstruation, entrenched negative attitudes, harmful perceptions, and limited access to proper menstrual hygiene products often lead to poor hygiene practices, increased risk of reproductive and urinary tract infections, social isolation, and reduced academic engagement.<sup>6</sup> In many instances, menstruating girls miss school during their periods due to fear of embarrassment, lack of sanitary facilities, or inadequate menstrual products, thereby contributing to gender disparities in educational attainment.<sup>7</sup>

The knowledge, attitude, and perception (KAP) of menstruation among adolescent girls play a pivotal role in shaping menstrual experiences. While some students may have accurate information obtained through family, teachers, or media, many others rely on peers or cultural myths that perpetuate misconceptions.<sup>8,9</sup> In some Nigerian communities, menstruation is wrongly associated with impurity, promiscuity, or illness, leading to social restrictions and discriminatory practices.<sup>2</sup> Inadequate parental communication, absence of comprehensive sexuality education in schools, and lack of menstrual health discussions among male peers further compound the problem.<sup>2</sup>

Secondary schools serve as crucial platforms for addressing these gaps by providing accurate information, promoting healthy attitudes, and creating a supportive environment for menstrual hygiene management.<sup>10</sup> World menstrual hygiene day is celebrated annually on May 28. It is a platform to create awareness, sensitize, and highlight the importance of menstrual care and address issues concerning menstruation.<sup>11</sup> This year's (2025) menstrual hygiene day theme is "together for a period-friendly world", urging collective action to ensure that menstruation does not limit access to education, health or opportunity.

However, few studies have holistically examined the interplay of knowledge, attitude, and perception among secondary school students and those with disabilities across diverse Nigerian settings.<sup>12</sup> Existing literature has primarily focused on regular girls' experiences, with limited attention to the school environment and the role of physical challenges and institutional support systems.<sup>13</sup>

This research seeks to assess the level of knowledge, prevailing attitudes, and perceptions surrounding menstruation and menstrual hygiene among secondary school students in a Nigerian inclusive secondary school. By exploring both the awareness and social dynamics related to menstruation among adolescents, the study aims

to generate evidence that can inform school health programs, guide policy formulation, and support interventions that promote menstrual dignity and equity. The findings will be relevant to education authorities, health policymakers, non-governmental organizations, and community leaders working to improve adolescent health, school retention, and gender equality.

## METHODS

This was a descriptive cross-sectional study conducted among female students attending Ihogbe College, an inclusive secondary school in Benin City, Edo State, Nigeria, between 9 June and 30 July 2025. The study assessed participants' knowledge, attitudes and perceptions regarding menstruation, as well as their menstrual hygiene practices. A total of 269 female students participated in the study, including students with disabilities. Participants were selected using a stratified sampling technique.

Written informed consent was obtained from participants aged 18 years and above. For participants younger than 18 years, written informed consent was obtained from their parents or guardians, alongside assent from the participants. Data were collected using a semi-structured questionnaire that obtained information on sociodemographic characteristics, knowledge of menstruation, attitudes and perceptions towards menstruation, and menstrual hygiene practices.

Knowledge of menstruation was assessed using participants' responses to the knowledge questions. A percentage score was calculated by dividing the number of correct responses by the total number of questions answered and multiplying by 100. Participants with scores of 70% and above were classified as having good knowledge, while those scoring below 70% were classified as having poor knowledge. Menstrual attitudes were assessed using responses to statements concerning participants' feelings and experiences during menstruation. Menstrual hygiene practices were assessed using reported menstrual absorbent use, frequency of changing absorbents, disposal methods, personal hygiene behaviours and menstrual hygiene management at school.

Data were analysed using IBM SPSS Statistics version 25. Continuous variables were summarised using means and standard deviations, while categorical variables were presented as frequencies and percentages. Associations between menstrual hygiene practice and selected characteristics, including age, school class, religion, menstrual knowledge and disability status, were assessed using Pearson's Chi-square test or Fisher's exact test, as appropriate. Statistical significance was set at  $p < 0.05$ .

## RESULTS

A total of 269 female students participated in the study. The findings are presented according to their

sociodemographic characteristics, knowledge and attitudes towards menstruation, menstrual hygiene practices, and factors associated with good menstrual hygiene practice.

**Table 1: Sociodemographic parameters of respondents.**

| Variables                | Frequency (n=269) | Percent |
|--------------------------|-------------------|---------|
| <b>Age group (years)</b> |                   |         |
| 10-14                    | 97                | 36.1    |
| 15-19                    | 162               | 60.2    |
| ≥20                      | 10                | 3.7     |
| Mean±SD                  | 15.4±2.5          |         |
| <b>Class</b>             |                   |         |
| JS1                      | 53                | 19.7    |
| JS2                      | 56                | 20.8    |
| JS3                      | 46                | 17.2    |
| SS1                      | 39                | 14.5    |
| SS2                      | 59                | 21.9    |
| SS3                      | 16                | 5.9     |
| <b>Religion</b>          |                   |         |
| Christianity             | 259               | 96.3    |
| Islam                    | 10                | 3.7     |
| <b>Tribe</b>             |                   |         |
| Benin                    | 122               | 45.3    |
| Igbo                     | 50                | 18.6    |
| Yoruba                   | 33                | 12.3    |
| Urhobo/Isoko             | 23                | 8.6     |
| Esan/Etsako              | 23                | 8.6     |
| Others                   | 18                | 6.7     |
| <b>Has a disability</b>  |                   |         |
| Yes                      | 26                | 9.7     |
| No                       | 243               | 90.3    |

Others: Ibibio, Efik, Ukwani, Tiv

### Sociodemographic characteristics

The mean age of participants was 15.4±2.5 years, with the majority (60.2%) aged 15-19 years, followed by those

aged 10-14 years (36.1%). More than half (57.7%) were in junior secondary school, while 42.3% were in senior secondary school. Most participants were Christians (96.3%), and the Benin ethnic group constituted the largest proportion (45.3%), followed by Igbo (18.6%) and Yoruba (12.3%). Twenty-six participants (9.7%) reported having a disability (Table 1).

### Knowledge of menstruation

Overall, 170 participants (63.2%) demonstrated good knowledge of menstruation, while 99 (36.8%) had poor knowledge (Figure 1).

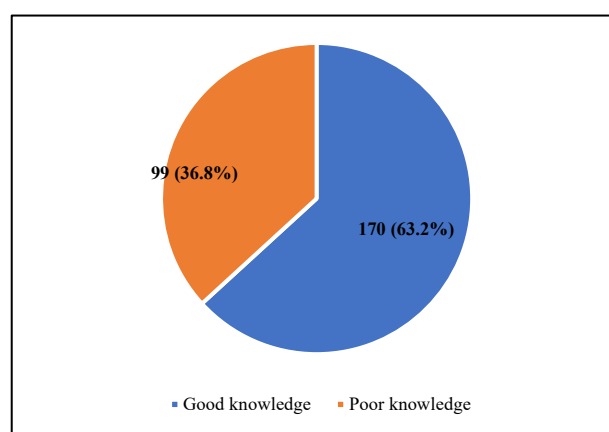


**Figure 1: Overall knowledge of menstruation.**

### Attitudes towards menstruation

Negative feelings and concerns surrounding menstruation were reported by a considerable proportion of participants. Ninety-three participants (34.6%) reported feeling ashamed during menstruation, while 131 (48.7%) felt insecure. More than half (56.9%) expressed concern that others could detect menstrual odour. Furthermore, 42.0% reported feeling scared during menstruation, and an equal proportion avoided social interactions during their menstrual periods (Table 2).

**Table 2: Attitude of students towards menstruation.**

| Parameters                                       |                                  | Agree n=269 (%) | Disagree n=269 (%) | P value |
|--------------------------------------------------|----------------------------------|-----------------|--------------------|---------|
| <b>How participants feel during menstruation</b> | I feel ashamed                   | 93 (34.6)       | 176 (65.4)         | <0.001* |
|                                                  | I feel insecure                  | 131 (48.7)      | 138 (51.3)         | 0.715   |
|                                                  | I worry that others can smell me | 153 (56.9)      | 116 (43.1)         | 0.028*  |
|                                                  | I am scared                      | 113 (42.0)      | 156 (58.0)         | 0.010*  |
|                                                  | I stay away from other people    | 113 (42.0)      | 156 (58.0)         | 0.010*  |

\*Statistically significant at p<0.05.

### Menstrual hygiene practices

Sanitary pads were the most commonly used menstrual absorbents, reported by 260 participants (96.7%), while nine (3.3%) used cloth. Approximately half (51.7%)

changed their menstrual absorbents three to four times daily, while 45.8% changed them once or twice daily. Among sanitary pad users, 49.2% disposed of used pads in latrines, while 36.9% burnt them. All nine participants who used cloth reported washing it with soap and water and drying it in sunlight before reuse. When participants

needed to change their menstrual absorbents while at school, 49.4% changed at school, 36.1% waited until returning home, and 14.5% went home immediately to change. Most participants (95.9%) reported bathing more frequently during menstruation, while 57.6% washed their genitalia with soap and water. Itching or burning

sensations during menstruation were reported by 34.2%, yellowish vaginal discharge by 25.3%, and unpleasant menstrual odour by 59.5% (Table 3). Overall, 218 participants (81.0%) were classified as having good menstrual hygiene practice, while 51 (19.0%) had poor practice (Figure 2).

**Table 3: Practice of menstrual hygiene among participants.**

| Variables                                                                   | Frequency (n=269) | Percent |
|-----------------------------------------------------------------------------|-------------------|---------|
| <b>The most frequently used menstruation management method</b>              |                   |         |
| Sanitary pad                                                                | 260               | 96.7    |
| Cloth                                                                       | 9                 | 3.3     |
| <b>Frequency to change the sanitary protection (per day)</b>                |                   |         |
| 1-2                                                                         | 123               | 45.8    |
| 3-4                                                                         | 139               | 51.7    |
| >4                                                                          | 7                 | 2.5     |
| <b>What to do with used sanitary pad (n=260)</b>                            |                   |         |
| Throw in latrine                                                            | 128               | 49.2    |
| Burn                                                                        | 96                | 36.9    |
| Throw in garbage bin                                                        | 19                | 7.3     |
| Throw in bush                                                               | 17                | 6.6     |
| <b>If using cloth, what do you do after use (n=9)</b>                       |                   |         |
| Wash with soap and water                                                    | 9                 | 100.0   |
| <b>If you wash and reuse cloth, how do you dry it (n=9)</b>                 |                   |         |
| Sunlight                                                                    | 9                 | 100.0   |
| <b>What to do when needed to change your sanitary protection at school?</b> |                   |         |
| Change at school                                                            | 133               | 49.4    |
| Wait until you are back home to                                             | 97                | 36.1    |
| Immediately go home to change                                               | 39                | 14.5    |
| <b>Other hygiene parameters*</b>                                            |                   |         |
| Bathe more often during menstruation                                        | 258               | 95.9    |
| Wash your genitalia with soap and water during menstruation                 | 155               | 57.6    |
| <b>Menstrual Experiences</b>                                                |                   |         |
| Experienced any itching or burning in the pelvic area during menstruation   | 92                | 34.2    |
| Had any yellowish discharge from your vagina                                | 68                | 25.3    |
| Had a bad odor during menstruation                                          | 160               | 59.5    |

\*Multiple responses were permitted.

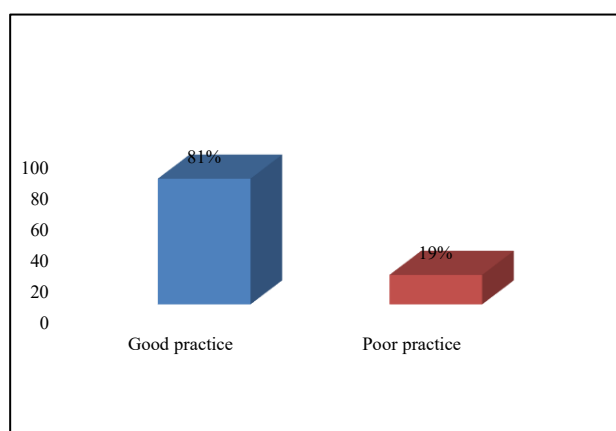


**Figure 2: Overall practice of menstrual hygiene.**

### ***Factors associated with menstrual hygiene practice***

Good menstrual hygiene practice was significantly associated with knowledge of menstruation and disability status. Among participants with good menstrual knowledge, 90.6% demonstrated good hygiene practice compared with 64.6% of those with poor knowledge ( $p < 0.001$ ). Similarly, good menstrual hygiene practice was reported by 82.7% of participants without disabilities compared with 65.4% of those with disabilities ( $p = 0.032$ ). Although good menstrual hygiene practice varied across age groups and school classes, these differences were not statistically significant ( $p = 0.545$  and  $p = 0.567$ , respectively). Religion was also not significantly associated with menstrual hygiene practice ( $p = 0.364$ ) (Table 4).

**Table 4: Association between practice of menstrual hygiene and sociodemographic attributes.**

| Variables                 | Practice of menstrual hygiene |                 | Test statistic  | P value |
|---------------------------|-------------------------------|-----------------|-----------------|---------|
|                           | Good (n=218) (%)              | Poor (n=51) (%) |                 |         |
| Age group (years)         |                               |                 |                 |         |
| 10-14                     | 82 (84.5)                     | 15 (15.5)       | $\chi^2=1.212$  | 0.545   |
| 15-19                     | 128 (79.0)                    | 34 (21.0)       |                 |         |
| ≥20                       | 8 (80.0)                      | 2 (20.0)        |                 |         |
| Class                     |                               |                 |                 |         |
| JS1                       | 40 (75.5)                     | 13 (24.5)       | $\chi^2=3.875$  | 0.567   |
| JS2                       | 45 (80.4)                     | 11 (19.6)       |                 |         |
| JS3                       | 39 (84.8)                     | 7 (15.2)        |                 |         |
| SS1                       | 33 (84.6)                     | 6 (15.4)        |                 |         |
| SS2                       | 46 (78.0)                     | 13 (22.0)       |                 |         |
| SS3                       | 15 (93.8)                     | 1 (6.2)         |                 |         |
| Religion                  |                               |                 |                 |         |
| Christianity              | 211 (81.5)                    | 48 (18.5)       | $\chi^2=0.824$  | 0.364   |
| Islam                     | 7 (70.0)                      | 3 (30.0)        |                 |         |
| Knowledge of menstruation |                               |                 |                 |         |
| Good                      | 154 (90.6)                    | 16 (9.4)        | $\chi^2=27.404$ | <0.001  |
| Poor                      | 64 (64.6)                     | 35 (35.4)       |                 |         |
| Physically challenged     |                               |                 |                 |         |
| Yes                       | 17 (65.4)                     | 9 (34.6)        | $\chi^2=4.592$  | 0.032   |
| No                        | 201 (82.7)                    | 42 (17.3)       |                 |         |

## DISCUSSION

This study examined the knowledge, attitudes, and menstrual hygiene practices among students of Ihogbe College in Benin City, including students with physical challenges. The findings highlight both encouraging trends and persisting gaps in menstrual health management among adolescents.

The study revealed that 63.2% of respondents demonstrated good knowledge of menstruation. Most students understood the definition (97.4%), source of menstrual blood (87.4%), and duration of menstrual flow (83.6%), reflecting an encouraging baseline of awareness. These findings are comparable to earlier Nigerian studies that reported moderate-to-high awareness of basic menstrual physiology among secondary school girls.<sup>14,15</sup> However, fewer students understood the age of menarche and the hygienic status of menstrual blood, which points to an incomplete understanding, similar to other findings in sub-Saharan Africa where gaps in menstrual health education persist.<sup>16,17</sup> Such knowledge gaps may be attributed to limited sex and reproductive health education in schools, socio-cultural barriers to open discussion, and inadequate parental guidance. Evidence suggests that formal education and parental communication significantly enhance menstrual knowledge and hygiene behaviour.<sup>18</sup>

Despite fair knowledge levels, attitudes remained largely negative. A substantial proportion of students reported feeling ashamed (35%), unclean (57.6%), and insecure

(48.7%) during menstruation. More than half worried that others could detect menstrual odour, while 42% avoided social interactions and gatherings. These findings resonate with previous research highlighting the emotional and social burden menstruation places on adolescents due to cultural taboos and stigma.<sup>19,21</sup> Such attitudes often result in social withdrawal, reduced school attendance, poor self-esteem and inferiority complex, particularly in low-resource settings where access to menstrual hygiene products and private facilities is limited.<sup>22</sup> Interventions that target both knowledge and perception, such as school-based awareness campaigns and peer education, are therefore essential.

Menstrual hygiene practices among students were generally good, with 81% practising proper hygiene. Sanitary pads were used by 96.7% of students, and 95.9% bathed more frequently during menstruation. These findings are more favourable than those from rural and less-resourced settings where cultural taboos and product affordability hinder good hygiene.<sup>15,23</sup> However, issues remain regarding disposal practices; approximately half of respondents disposed of pads in latrines, which poses environmental and plumbing risks. A notable 36% delayed changing sanitary materials until returning home, possibly due to inadequate WASH (water, sanitation and hygiene) infrastructure or lack of privacy in school toilets. These concerns have been widely reported in sub-Saharan Africa, where school toilets often lack menstrual-friendly facilities.<sup>20,24</sup>

Cloth users, though few, reported hygienic practices such as washing with soap and drying in sunlight. While

reusable materials can be safe when handled properly, the risk of infection increases if washing and drying are inadequate or rushed due to shame or time constraints.<sup>25</sup> Statistical analysis confirmed that menstrual knowledge was significantly associated with hygiene practices ( $p < 0.001$ ), echoing previous research showing that better-informed girls are more likely to adopt healthy menstrual behaviors.<sup>18,26</sup>

The study notably included students with disabilities (10%), a group rarely featured in menstrual health research. While 65.4% of disabled students practised good hygiene, this was significantly lower than the 82.7% among non-disabled students ( $p < 0.001$ ). These findings are consistent with global reports indicating that girls with disabilities face disproportionate menstrual health challenges due to limited physical access, fewer support systems, and lower health education exposure.<sup>27</sup> Ensuring menstrual dignity for all adolescents requires inclusive interventions such as assistive hygiene tools, accessible school toilets, caregiver training, and inclusion in sexuality education that address the intersection of disability and menstrual health.<sup>28</sup>

## CONCLUSION

This study demonstrates that while menstrual knowledge and hygiene practices among students of Ihogbe College are generally satisfactory, negative perceptions, stigma, and infrastructural barriers remain significant. Emotional distress such as shame, insecurity, and fear of discrimination were common during menstruation. Better knowledge was strongly linked with improved hygiene behaviours, suggesting that school-based menstrual education can play a transformative role. Schools should ensure access to safe and private WASH facilities, provide adequate menstrual products, and train staff on supportive approaches to menstrual management. Policymakers and NGOs must work together to ensure that menstruation does not hinder adolescents' education, dignity, or wellbeing.

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