



Knowledge, Attitudes, and Practices on Sexually Transmitted Infections Among Tertiary Students in Ghana: A Cross-Sectional Study

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ABSTRACT

Background: Sexually transmitted infections (STIs) remain a growing public health challenge among young people in sub-Saharan Africa, particularly in Ghana. Tertiary students are vulnerable due to risky sexual behaviors, stigma, and insufficient knowledge of STIs.

Objective: This study aimed to assess the knowledge, attitudes, and practices (KAP) related to STIs among tertiary education students in Ghana and to examine how demographic characteristics influence these factors.

Methods: A cross-sectional descriptive study was conducted among 1,500 students from six tertiary institutions using a stratified random sampling technique. Data were collected through a structured, self-administered questionnaire and analyzed using SPSS Version 25. Descriptive statistics, chi-square tests, and binary logistic regression were used to explore associations and predictors.

Results: Only 58.5% of students demonstrated adequate knowledge of HIV/AIDS, while knowledge of other STIs was lower: syphilis (45.3%), gonorrhoea (40.1%), and chlamydia (35.0%). Although 72.4% reported ever using condoms, only 28.6% practiced consistent condom use, and just 9.4% had undergone STI testing. Female and rural students reported significantly higher stigma scores (mean = 4.0 and 4.1, respectively, on a 5-point scale) compared to male and urban peers. Key predictors of poor knowledge and practices included rural residence, lower education level, and female gender ($p < 0.05$).

Conclusion: Findings reveal concerning gaps between STI awareness and preventive behavior among Ghanaian tertiary students, particularly in rural and female subgroups. These results underscore the need to integrate STI education into tertiary curricula, expand access to youth-friendly STI testing, and implement stigma-reduction campaigns. Targeted policies and campus health interventions are critical for improving sexual health outcomes in this at-risk population.

Keywords: Sexually transmitted infections, tertiary students, Ghana, KAP study, stigma, sexual health behavior.

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INTRODUCTION

As noted by the World Health Organization, STIs create a significant public health concern with an alarming rate of over one million new infections reported daily [1]. Infections such as HIV/AIDS, syphilis, gonorrhea and chlamydia not only threaten individual well-being but also the capacity of healthcare systems to function – particularly in developing and emerging economies. Among the youth and adolescent populations, the prevalence of STIs is notable in Ghana, as they have become one of the principal public health problems. If left untreated, sexually transmitted infections may result in serious lifelong health complications such as chronic infertility, pelvic inflammatory disease, cervical cancer, and a higher likelihood of contracting HIV [2, 3].

Compared to other populations within the country, the youth, especially those at the tertiary level of education, remain one of the most vulnerable groups for STI exposure. This unique situation is due to a combination of behavioral, sociocultural, and structural factors. Tertiary students are generally undergoing a life stage shift which involves a new level of freedom and an experimentation phase that includes new social and sexual interactions. This population lacks sufficient accurate, comprehensive, and nonjudgmental sexual health information [4], which in turn facilitates sexual behaviors that can be classified as risky, such as inconsistent condom use, multiple sexual encounters, and even transactional sex [4]. Numerous studies established that Ghanaian tertiary students often engage in high-risk behavior only because these students lack informed decision-making frameworks [5, 6].

STI awareness in Ghana remains critically low. There is little awareness of, and even less informed emphasis placed on, sexually transmitted diseases and infection (STI) knowledge during adolescence, despite the existence of national health promotion frameworks and STI awareness campaigns targeting adolescents. Inhibited norms regarding sexuality lead to predominant myths regarding the STI unit within public health, accompanied by misconceptions of their symptoms, methods of transmission, and preventative measures unknown outside sexually restricted environments [7]. These myths promote unattended social stigma, which perpetuates overt silence, postponement of testing, and treatment-

seeking behaviors. Many students, with increased diagnosis delay, remain unaware of their STI status and, along with heightened infection rates, are placed at significant risk of adverse health outcomes [8].

Moreover, the gaps in knowledge, attitudes, and practices (KAP) of STIs may differ considerably with respect to age, gender, or even region. For example, urban students may have better educational services than their counterparts in rural or peri-urban settings. In the same manner, sociocultural norms and gender roles may affect how men and women differ on self-perception of sexual risk, condom negotiation, and STI prevention service utilization [9, 10]. Without careful consideration of how these demographic nuances interact with STI-related behaviors, health programs designed might not be able to reach the most at-risk populations or create a substantial impact.

Keeping these issues in mind, it is essential to not only evaluate gaps in KAP among students in higher learning institutions in Ghana but, more importantly, discern the backdrop that shapes such a distinctive approach. This study, thus, aims at assessing the STI awareness, attitudinal, and behavioral patterns of students in higher learning institutions and how these are associated with the students' age, gender, and urban or rural place of residence.

The results from this study are aimed at contributing to the evidence base to aid in the development of specific and contextualized sexual health interventions. Improving STI-related knowledge and the associated health risks within this demographic is crucial to enhancing sexual and reproductive health indicators, alleviating the burden of STIs on the healthcare system, and fulfilling public health equity objectives in Ghana, as well as empowering the youth within the nation.

METHODS

Study Design

This study employed a cross-sectional descriptive design to assess knowledge, attitudes, and practices (KAP) related to sexually transmitted infections (STIs) among tertiary students in Ghana. The cross-sectional approach was selected, as it is widely used for measuring the prevalence of behaviors and knowledge within a population at a single point in time [11]. However, such a design limits the ability to infer causality between variables.



Study Population and Sampling Procedure

The target population comprised tertiary education students aged 18–30 years enrolled in six public and private universities across different regions of Ghana. A stratified random sampling technique was adopted to ensure demographic and geographic representation. Stratification was based on:

- Geographical location (urban vs. rural-based institutions)
- Type of institution (public vs. private)
- Academic programs (health sciences, humanities, and general sciences)

Stratified sampling enhances the representativeness of subgroups and improves statistical efficiency [12]. Within each stratum, participants were randomly selected using class registers and student association lists. Researchers approached students in classrooms and lecture halls after obtaining permission from institutional authorities.

Recruitment and Participation

Eligible students were invited to participate through announcements during lectures and follow-up by class representatives. Students were provided with information sheets and consent forms. Those who agreed completed the questionnaires anonymously during scheduled classroom sessions under the supervision of trained research assistants.

Inclusion and Exclusion Criteria

Inclusion Criteria

- Enrolled as a full-time student in a participating tertiary institution in Ghana.
- Aged between 18 and 30 years.
- Willing to provide informed consent.

Exclusion Criteria

- Visiting or exchange students.
- Individuals unable to read or understand the survey language (English).
- Students who declined to participate or withdrew at any point.

These criteria were set to ensure homogeneity of the target group and reduce confounding factors.

Questionnaire Design and Administration

Data was collected using a structured, self-administered questionnaire, which has been shown to be effective in capturing sensitive sexual health information while minimizing social desirability bias [13]. The questionnaire consisted of four sections:

1. Demographics (e.g., age, gender, academic level, institution, location)
2. Knowledge: 25 multiple-choice and true/false questions assessing awareness of STI types, symptoms, transmission, and prevention
3. Attitudes: 10 items using a 5-point Likert scale (strongly disagree to strongly agree) exploring personal beliefs and stigma
4. Practices: 8 items on behaviors, including condom use, STI testing, and sexual history

Validity and Reliability

The questionnaire was pre-tested on 50 students from a tertiary institution not included in the main study. Feedback was used to refine language clarity and cultural sensitivity. The reliability of each domain was assessed using Cronbach's alpha, a widely accepted measure of internal consistency [14]:

- Knowledge: $\alpha = 0.81$
- Attitudes: $\alpha = 0.76$
- Practices: $\alpha = 0.74$

These results indicate acceptable reliability for the scale domains.

KAP Score Calculation

Each section of the questionnaire was scored independently:

- Knowledge: Each correct response scored 1 point; incorrect or "don't know" answers scored 0. Maximum score = 25. Scores ≥ 12.5 (50%) were classified as adequate knowledge, consistent with established cutoffs in STI KAP literature [15].
- Attitudes: Responses on a 5-point scale were averaged. A mean score ≥ 3.0 was considered indicative of positive attitudes toward STI prevention and health-seeking behavior.
- Practices: Responses were binary (yes/no or always/never). Good practices included consistent condom use, regular STI testing, and monogamous sexual activity. A composite score of ≥ 4 out of 8 was defined as a good STI-related practice.

An overall KAP index was also created for multivariate analysis.

Data Analysis

Data was entered and cleaned using Microsoft Excel and analyzed with SPSS version 25. Descriptive statistics (frequencies, means, standard deviations) were used to summarize responses. Chi-square tests assessed associations between categorical variables



(e.g., gender and knowledge level). Binary logistic regression was used to identify demographic predictors of good knowledge and practices. Statistical significance was set at $p < 0.05$.

Limitations of Study Design

As a cross-sectional study, causality between knowledge and behavior cannot be established [16]. Additionally, responses may be subject to recall bias or social desirability bias, especially in the context of sexual behavior. Finally, while the questionnaire was pre-tested, cultural variability between institutions may still influence the interpretation of certain items.

Ethical Considerations

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of Ghana, Legon (IRB Protocol No. UG-IRB/2024-144). All procedures adhered to the ethical principles

outlined in the Declaration of Helsinki [17]. Written informed consent was obtained from each participant prior to data collection, and participation was entirely voluntary.

To ensure anonymity and confidentiality, no personal identifiers were collected on the questionnaires. Completed forms were stored in a locked cabinet, and digital data were password-protected and accessible only to the research team. Participants were informed that they could withdraw from the study at any time without facing any consequences.

RESULTS

The study involved 1,500 tertiary students across Ghana, evenly split by gender (750 males and 750 females).

Table 1: Demographic Characteristics of Participants (N = 1,500)

| Characteristic | Category | n (%) |
|------------------------|---------------|-------------|
| Age Group | 18–20 | 700 (46.7%) |
| | 21–25 | 560 (37.3%) |
| | 26–30 | 240 (16.0%) |
| Gender | Male | 750 (50.0%) |
| | Female | 750 (50.0%) |
| Education Level | Undergraduate | 950 (63.3%) |
| | Postgraduate | 450 (30.0%) |
| | Vocational | 100 (6.7%) |
| Residence | Urban | 950 (63.3%) |
| | Rural | 550 (36.7%) |

Most participants were aged 18–20 years (46.7%), followed by 21–25 years (37.3%) and 26–30 years (16%). A majority were undergraduates (63.3%),

while postgraduates constituted 30.0% and vocational students 6.7%. Regarding residence, 63.3% lived in urban areas and 36.7% in rural areas.

Table 2: STI Knowledge Domain Performance (N = 1,500)

Δ = Difference between urban and rural means; p-values indicate significance of difference across settings.

| Domain | Max Score | Mean (±SD) | Adequate Knowledge (%) | Urban-Rural Gap (Δ) |
|-------------------|-----------|-------------|------------------------|---------------------|
| HIV/AIDS | 25 | 17.5 (±4.2) | 58.5% | +6.4** |
| Syphilis | 25 | 12.3 (±3.9) | 45.3% | +4.2* |
| Gonorrhoea | 25 | 10.2 (±3.5) | 40.1% | +5.6* |
| Chlamydia | 25 | 9.6 (±3.2) | 35.0% | +5.1* |

Note: * $p < 0.01$, ** $p < 0.001$.

Participants' knowledge was evaluated across four STI domains: HIV/AIDS, syphilis, gonorrhoea, and

chlamydia. Scores were based on a 25-point scale for each STI. A minimum of 12.5 points (50%) was considered "adequate knowledge".



As shown in Table 2, knowledge was highest for HIV/AIDS (58.5% adequate knowledge) but significantly lower for syphilis (45.3%), gonorrhea

(40.1%), and chlamydia (35.0%). Urban students consistently outperformed rural peers across all domains.

Table 3: Perception Scores by Subgroup (5-point Likert Scale)

| Dimension | Total Mean (±SD) | Male | Female | Urban | Rural |
|----------------|------------------|------|--------|-------|--------|
| Stigma | 3.7 (±0.9) | 3.5 | 4.0*** | 3.5 | 4.1** |
| Perceived Risk | 3.0 (±1.1) | 2.8 | 3.3** | 3.2 | 2.6*** |
| Self-Efficacy | 3.5 (±0.8) | 3.6 | 3.4 | 3.6 | 3.3* |

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

Participants' perceptions were measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) for three dimensions: stigma, perceived risk, and self-efficacy. Mean scores and subgroup differences are shown in Table 3.

Female and rural students reported higher levels of STI-related stigma. Rural students also exhibited significantly lower perceived risk and self-efficacy compared to their urban counterparts, indicating limited awareness and confidence in managing STI-related health.

Table 4: Reported Sexual Health Behaviors (N = 1,500)

| Behavior | n (%) |
|--------------------------|---------------|
| Ever Used Condoms | 1,086 (72.4%) |
| Consistent Condom Use | 429 (28.6%) |
| Regular STI Testing | 141 (9.4%) |
| Multiple Sexual Partners | 320 (21.3%) |

As detailed in Table 4, 72.4% of participants reported ever using condoms, but consistent condom use was low at 28.6%. Most concerning was the low STI testing rate of just 9.4%, signaling a major gap in preventive health behavior.

These findings indicate a mismatch between awareness and preventive practice. While knowledge exists, the adoption of protective behaviors remains suboptimal, underscoring the need for targeted interventions.

DISCUSSION

The findings revealed notable disparities in STI knowledge between urban and rural tertiary

students in Ghana. Urban students consistently demonstrated higher awareness levels across all STI categories—HIV/AIDS, syphilis, gonorrhea, and chlamydia—compared to rural counterparts. This disparity supports previous studies indicating that urban populations often benefit from greater exposure to health information, school-based education, and digital media platforms [18, 19].

While it may be tempting to attribute rural knowledge gaps solely to curricular deficiencies, this explanation should be approached cautiously. Structural factors such as limited internet access, fewer trained educators, and pervasive cultural taboos around sexual health in rural areas likely contribute more significantly [3]. For example, rural students may lack exposure to peer discussion groups or health outreach programs that are more common in urban campuses [20]. Further qualitative research is recommended to explore the sociocultural and institutional contexts behind these observed disparities.

Despite a relatively high rate of reported condom use (72.4%), only 28.6% of participants reported consistent use—highlighting a troubling disconnect between awareness and sustained protective behavior. This pattern is well-documented in African youth populations, where cultural perceptions, trust in sexual partners, and discomfort with condom negotiation often interfere with consistent use [21, 22].

More concerning is the STI testing rate, which stood at just 9.4%. This figure represents a major public health gap, especially considering the sexual activity reported and the 21.3% of respondents who had multiple sexual partners. Low testing uptake is likely influenced by fear of stigma, lack of youth-friendly health services, and limited access to confidential screening—especially in rural areas [23, 24]. Regular



STI screening is essential for early diagnosis and prevention, and this study underscores the urgent need to scale up awareness and access among university populations. Gender disparities were evident in both attitudes and practices. Female students reported significantly higher levels of STI-related stigma compared to males. This finding echoes prior research that suggests women in many African contexts bear a disproportionate burden of sexual shame and social punishment, especially when discussing or seeking care for STIs [8, 25].

In addition, rural students were more likely to perceive STIs as a source of personal shame or community disgrace. The persistence of such stigma prevents open conversations, deters health-seeking behaviors, and reinforces misinformation about STIs [26]. Community health education campaigns must therefore tackle both misinformation and the moralistic framing of STIs, especially in rural and religiously conservative settings.

The findings hold important implications for both policy and university-level intervention. Firstly, tertiary institutions should incorporate comprehensive sexual health education into general orientation programs and coursework. Peer education models and mobile health interventions, proven effective in sub-Saharan African contexts, can be adapted for university campuses [27]. In addition, collaboration with NGOs can enable periodic campus-based STI screening events and distribute free condoms discreetly. Policymakers and health authorities must also work to improve access to youth-friendly STI services, particularly in underserved regions. Confidentiality, affordability, and non-judgmental service delivery are key to encouraging STI testing and routine sexual health checks [24]. Public messaging should be reframed to normalize STI prevention as a health responsibility rather than a moral failing.

Finally, future interventions must adopt an intersectional lens, recognizing how gender, location, and socio-economic status interact to shape vulnerability. The KAP data from this study provide a critical framework for tailoring targeted campaigns and health policies that reflect the lived realities of Ghanaian youth.

CONCLUSION

This study highlights significant knowledge gaps, behavioral inconsistencies, and stigmatizing attitudes regarding sexually transmitted infections (STIs) among tertiary education students in Ghana. While awareness of HIV/AIDS was relatively high, knowledge of other STIs such as syphilis, gonorrhea, and chlamydia remained poor, especially among rural students. Although the majority reported prior condom use, consistent use was low, and only 9.4% had ever undergone STI testing. Additionally, stigma surrounding STIs was markedly higher among female and rural respondents, influencing both attitude and health-seeking behavior.

These findings underscore the urgent need for institutional and public health interventions that prioritize sexual health among young people. Tertiary institutions should integrate comprehensive STI education into their core curricula, supported by peer-led programs and access to confidential health services. In rural regions, outreach programs—delivered through community health workers or mobile clinics—are essential to bridge the access and information gap. Policy efforts must also focus on reducing stigma through culturally sensitive awareness campaigns and expanding routine, youth-friendly STI screening across tertiary campuses. These interventions should be informed by demographic disparities identified in this study to ensure relevance and impact.

Limitations

Limitations of this study include its cross-sectional design, which prevents causal inferences, and the reliance on self-reported data, which may be subject to recall and social desirability biases. Nonetheless, the insights provided offer a valuable foundation for targeted intervention strategies aimed at improving STI prevention and care among Ghana's youth.

Conflict of Interest

The authors declare that no conflict of interest.



REFERENCES

- [1] World Health Organization. Sexually transmitted infections (STIs) [Internet]. 2021 [cited 2025 Apr 30]. Available from: [https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-\(stis\)](https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis))
- [2] Adu-Gyamfi E, Andoh-Arthur J. STI awareness and condom use among tertiary students in Ghana: Implications for policy and practice. *Afr J Reprod Health*. 2021;25(3):102–10.
- [3] Boakye DS, Sarpong EA. Socio-demographic predictors of STI knowledge among youth in Ghana: Evidence from a cross-sectional survey. *Int J Sex Health*. 2020;32(4):351–62.
- [4] Oppong AA, Osei K. Risky sexual behaviors among Ghanaian university students: A cross-sectional study. *Ghana Med J*. 2019;53(2):98–106.
- [5] Addo NA, Asante KO. Exploring sexual health knowledge and perceptions among university students in Ghana. *BMC Public Health*. 2022;22:412.
- [6] Gyamerah AA, Ohemeng F. The role of peer influence in shaping sexual behavior of tertiary students in Ghana. *Sex Cult*. 2021;25:910–27.
- [7] Arthur J, Osafo J. Addressing stigma in sexual health education: Lessons from Ghana. *J Health Psychol*. 2018;23(11):1463–73.
- [8] Nketiah-Amponsah E, Senadza B. Determinants of STI testing among Ghanaian youth: Evidence from the Demographic and Health Survey. *Reprod Health*. 2020;17:149.
- [9] Akotia CS, Kugbey N. Gender and sexual health: Examining the knowledge and practices among university students in Ghana. *Int J Sex Health*. 2021;33(1):56–70.
- [10] Sambah F, Ampofo C. Urban-rural divide in STI awareness among youth in Ghana: A systematic review. *Pan Afr Med J*. 2022;43:62.
- [11] Setia MS. Methodology series module 3: Cross-sectional studies. *Indian J Dermatol*. 2016;61(3):261–4.
- [12] Lohr SL. Sampling: Design and analysis. 2nd ed. Boca Raton: Chapman and Hall/CRC; 2019.
- [13] Tourangeau R, Yan T. Sensitive questions in surveys. *Psychol Bull*. 2007;133(5):859–83.
- [14] Tavakol M, Dennick R. Making sense of Cronbach's alpha. *Int J Med Educ*. 2011;2:53–5.
- [15] Oppong Asante K, Osafo J, Doku PN. The role of condom use self-efficacy on intended and actual condom use among university students in Ghana. *J Community Health*. 2017;42(5):968–76.
- [16] Levin KA. Study design III: Cross-sectional studies. *Evid Based Dent*. 2006;7(1):24–5.
- [17] World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*. 2013;310(20):2191–4.
- [18] UNICEF. Young people's digital access and health information: The case of Ghana [Internet]. 2021 [cited 2025 Apr 30]. Available from: <https://www.unicef.org>
- [19] Gyekye S, Osei FA, Armah P. Technology use and sexual health communication among Ghanaian youth: Bridging urban-rural gaps. *Digit Health*. 2022;8:20552076221138464.
- [20] Kugbey N, Osei-Bonsu E, Oppong AA. Knowledge and risk perception of STIs among rural students in Ghana. *BMC Infect Dis*. 2021;21:104.
- [21] Doku PN, Asante KO. Perceived barriers to condom use among university students in Ghana. *J Health Psychol*. 2022;27(5):961–74.
- [22] Ochieng BMN, Akoto DM, Kusi-Appiah S. Condom use among sexually active university students in Accra, Ghana: A mixed-methods study. *J Public Health Afr*. 2019;10(1):91–8.



- [23] Amo-Adjei J, Tuoyire DA. Barriers to health care access among Ghanaian adolescents: Evidence from a national survey. *BMC Public Health*. 2018;18(1):1–9.
- [24] World Health Organization. Global health sector strategy on sexually transmitted infections 2022–2030 [Internet]. 2022 [cited 2025 Apr 30]. Available from: <https://www.who.int/publications/i/item/9789240052390>
- [25] Kumi-Kyereme A, Awusabo-Asare K. Gender, stigma, and reproductive health decision-making among adolescents in Ghana. *Afr J Reprod Health*. 2020;24(2):43–53.
- [26] Osafo J, Asante K, Agyapong I. “We don’t talk about it”: A qualitative study of stigma and sexual health among university students in Ghana. *Health Psychol Open*. 2017;4(2):2055102917743350.
- [27] Adadevoh D, Mensah E, Appiah A. Evaluating the effectiveness of peer-based sexual health education in Ghanaian tertiary institutions. *Afr J Health Promot*. 2021;18(2):45–57.

