OPEN ACCESS

Journal of Advanced Research in Social Sciences

ISSN 2538-919X

Knowledge, Attitude and Barriers to the Utilization of Contraceptives Among Undergraduates Residing in the Ayawaso West Municipality in the Greater Accra Region of Ghana

Judith Hackman[1], Theophilus Owusu-Ansah[2*], Sethina Amissah-Tawiah[2], Margaret Forkuo Sarpong, and Perfectual Linnan Labik[1]

[1]School of Public Service and Governance, Ghana Institute of Management and Public Administration, Accra, Ghana

[2] Laboratory, FOCOS Hospital, Accra, Ghana

ARTICLE INFO

Keywords:

Contraceptives,
Knowledge,
Attitude,
Barriers,
Undergraduates,
Ghana

ABSTRACT

This study examined the knowledge, attitudes, and barriers influencing perceptions and acceptance of contraceptives among undergraduate students residing in the Ayawaso West Municipality in the Greater Accra Region of Ghana. A descriptive cross-sectional design was employed, involving undergraduate respondents selected using multistage sampling techniques. Data were collected using a structured questionnaire and analyzed using descriptive and inferential statistics. The findings revealed varying levels of knowledge regarding contraceptive methods, generally positive attitudes toward contraceptive use, and significant barriers including misconceptions, fear of side effects, sociocultural influences, stigma, and limited access to youth-friendly reproductive health services. Socio-demographic factors such as age, gender, religion, and institution of study were significantly associated with contraceptive knowledge, attitudes, and perceived barriers. Binary logistic regression showed that higher knowledge levels significantly predicted positive attitudes toward contraceptive use. The study highlights the need for targeted reproductive health education and improved access to youth-friendly contraceptive services among undergraduate students.

1. Introduction

Reproductive health, particularly of university and college students, influences public health, education, and socioeconomic growth globally. An important section of the sexually active

*Corresponding author's E-mail address: theophilus20.toa@gmail.com

Cite this article as:

Hackman, J., Owusu-Ansah, T., Amissah-Tawiah, S., Sarpong, M. F., & Asantewaa Forson, R. (2026). Knowledge, Attitude and Barriers to the Utilization of Contraceptives Among Undergraduates Residing in the Ayawaso West Municipality in the Greater Accra Region of Ghana. *Journal of Advanced Research in Social Sciences, 9*(3): 1-23. https://doi.org/10.33422/jarss.v9i3.1838

© The Author(s). 2026 **Open Access**. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and redistribution in any medium, provided that the original author(s) and source are credited.

population, Individuals within this age group commonly experience increased autonomy, love, and life choices in their late teens and early twenties. Lack of accurate information, modern contraception, and youth-focused reproductive health services puts them at risk of unintended pregnancies and STIs, including HIV/AIDS (World Health Organization, 2019).

Access to modern contraceptives is both a public health and human rights issue that enables individuals to make informed decisions regarding child spacing and timing (Mbilinyi & Moshiro, 2020). SDG 3 includes Target 3.7 on universal sexual and reproductive health care to ensure healthy lives and well-being for all. Teen contraception inequities continue despite decades of activism. Modern contraception is needed by 218 million women in low- and middle-income countries (LMICs), many of whom are teens and young adults (Boonstra, 2014).

Particularly in sub-Saharan Africa. With 91 per 1,000 women aged 15–49 impacted and over 38% aborted, the region has among of the highest rates of undesired births globally (Boonstra, 2014). Misinformation, cultural taboos, stigma, religious beliefs, and lack of youth-friendly services impact contraceptive use (Tumlinson et al., 2013). These challenges threaten SDG 5, which empowers women and girls, notably Target 5.6, which supports universal sexual and reproductive health and rights.

Ghanaian youth utilize modern contraception at low rates despite public health efforts. The 2015 Ghana Demographic and Health Survey (GDHS) indicated that urban residents used contraceptives more than rural residents (Ghana Statistical Service, 2015). Urban adolescents in disadvantaged regions lack affordable and confidential reproductive health care owing to socioeconomic inequality (Ghana Statistical Service, 2022, WHO, 2019). Young people may avoid effective contraception because they think it causes infertility or long-term health problems (Semachew et al., 2018).

Ayawaso West Municipality in Greater Accra has numerous university students in dorms and rentals. Students face high costs, loss of privacy, fear of criticism, and lack of treatment information while being near major hospitals (Appiah-Agyekum & Kayi, 2013). These restrictions promote unprotected sexual behavior, which may cause STDs, unsafe abortions, and unwanted pregnancies. The impacts may include school dropout, career decline, and economical difficulties, especially for young women.

Ghana must address unplanned pregnancies to achieve SDG 3 (good health and well-being), SDG 5 (gender equality), and SDG 4 (quality education). This study explores Ayawaso West Municipality students' contraceptive knowledge, attitudes, and barriers. Identifying the main contraceptive use variables may motivate targeted initiatives to improve reproductive health, erase gender inequities, and empower Ghanaian adolescents educationally and socioeconomically.

1.1 Theoretical Framework

This study was informed by the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB), both of which are widely used to explain health-related behaviors, including contraceptive use. The Health Belief Model proposes that individuals are more likely to engage in preventive health behaviors when they perceive themselves to be susceptible to a health problem, believe the consequences are serious, recognize the benefits of taking action, and perceive fewer barriers to the behavior. In the context of contraceptive use, students may be more willing to use contraceptives if they recognize their risk of unintended pregnancy or sexually transmitted infections and believe that contraceptive methods are effective and safe.

Conversely, misconceptions, fear of side effects, stigma, and concerns regarding privacy may act as perceived barriers that discourage utilization.

The Theory of Planned Behavior suggests that behavioral intentions are influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control. Positive attitudes toward contraceptives, support from peers and family, and confidence in accessing contraceptive services may increase the likelihood of contraceptive utilization. Conversely, negative cultural or religious beliefs and perceived social disapproval may reduce acceptance and use.

These theoretical perspectives provide a useful framework for understanding how knowledge, attitudes, and perceived barriers influence contraceptive-related decision-making among undergraduate students in the Ayawaso West Municipality.

1.2 Statement of the Problem

Unplanned pregnancies and unsafe abortions disproportionately affect young women in sub-Saharan Africa, making contraceptive use among university students a significant public health concern (Morhe et al., 2023). In Ghana, many young people migrate to urban areas such as Ayawaso West Municipality for higher education, gaining increased autonomy alongside heightened sexual and reproductive health risks. Although university students often possess knowledge of contraceptive methods, utilization remains low due to misconceptions about side effects, sociocultural and religious constraints, stigma, lack of privacy, high costs, limited youth-friendly services, and negative healthcare provider attitudes (Appiah-Agyekum & Kayi, 2013, Modey, 2018). These barriers contribute to unprotected sexual practices, leading to unintended pregnancies, unsafe abortions, and sexually transmitted infections, which can disrupt academic progress and long-term socioeconomic outcomes, particularly for young women (Koroma et al., 2022). Despite national adolescent reproductive health initiatives, implementation gaps and limited focus on university students persist. Consequently, insufficient context-specific evidence hampers effective intervention design, underscoring the need to address contraceptive knowledge, attitudes, and barriers among undergraduates to support SDGs 3, 4, and 5.

1.3 Objectives of the Study

The general objective of this study was to assess the knowledge, attitudes, and barriers related to contraceptive use among undergraduate students residing in the Ayawaso West Municipality in the Greater Accra Region of Ghana.

The specific objectives of the study are to:

1. Assess the level of knowledge of contraceptive methods among undergraduate students residing in the Ayawaso West Municipality.
2. Examine the attitudes of undergraduate students toward contraceptive use.
3. Ascertain the barriers that influence perceptions and acceptance of contraceptives among undergraduate students.
4. Recommend strategies and interventions to improve contraceptive education and access among undergraduate students.

2. Methods

2.1 Study Design

Quantitative cross-sectional surveys were used in this positivist investigation. Positivism emphasizes objective, measurable data to identify patterns and analyze relationships. A cross-sectional survey methodology is suitable for this goal since it collects data from a specific population at one time, allowing statistical analysis of independent and dependent variables. Since the study will explore knowledge, attitudes, and obstacles and their link with undergraduate contraceptive usage, this design is appropriate. Cross-sectional research optimizes time and resources while producing accurate and generalizable findings by collecting quantitative data on all variables simultaneously. A representative sample of undergraduate students in Ayawaso West Municipality received a structured questionnaire for this design application.

Closed-ended questions ensured consistency and comparability in questionnaire responses. Data was collected once without follow-up and analyzed using statistical methods to determine variable distribution and interrelationship strength and direction. Positivist ideology and a cross-sectional methodology were used to gather empirical data on contraceptive use factors, laying the groundwork for evidence-based policy and action.

2.2 Study Site

Ayawaso West Municipality hosted the study. Ayawaso West Municipal is one of 261 Metropolitan, Municipal, and District Assemblies (MMDAs) in Ghana and one of 29 in the Greater Accra Region. In 2018, 38 district assemblies were created and renovated, including the Ayawaso West Municipal Assembly from the Ga West Municipal Assembly. In the 2021 census on population and housing, the municipality had 75,303 people, 38,164 men and 36,689 women. Ayawaso West Municipality hosted the study for numerous reasons. Its large concentration of higher education institutions and undergraduate students make it ideal for studying contraceptive knowledge, attitudes, and usage. The municipality is an urban area with diverse socio-economic and cultural backgrounds, making it ideal for studying reproductive health behavior. Its location in the Greater Accra Region makes data collection easy, and current demographic data improves sampling and contextual analysis.

2.3 Study Population

The study population comprised undergraduate students aged 18–35 years residing in the Ayawaso West Municipality of the Greater Accra Region, Ghana. This population was selected because undergraduate students represent a key demographic in reproductive health research, as they are at a stage where contraceptive knowledge, attitudes, and decision-making are particularly relevant. The municipality hosts several major tertiary institutions, including the University of Ghana, Ghana Institute of Management and Public Administration (GIMPA), and Wisconsin International University College, providing a diverse student population. Eligible participants were undergraduate students who had resided in the municipality for at least six months, were willing to provide informed consent, and included both sexually active and non-sexually active individuals. Students who did not consent or were non-residents of the municipality were excluded. The upper age limit of 35 years was adopted to reflect the presence of mature, sandwich, part-time, and delayed-entry undergraduate students, ensuring broader representation of the tertiary student population.

2.4 Sampling procedure

A multistage sampling technique was used to recruit undergraduate students residing in the Ayawaso West Municipality. Four tertiary institutions—the University of Ghana, Ghana Institute of Management and Public Administration (GIMPA), University of Professional Studies, Accra (UPSA), and Wisconsin International University College—were purposively selected based on their location, undergraduate enrolment, accessibility, and institutional diversity. Proportionate allocation was applied to determine the sample size for each institution, and students were stratified by academic level to ensure adequate representation. Where available, student registers and class attendance lists were used to identify eligible participants, who were then selected through simple random sampling. In the absence of complete student lists, systematic recruitment was conducted in lecture halls and other commonly frequented campus locations, including libraries, hostels, and cafeterias. Recruitment continued until the predetermined sample size for each institution was achieved. Although stratification enhanced representativeness, the purposive selection of institutions may limit the generalizability of the findings.

2.4.1 Recruitment and Consent Procedure

Participants were recruited from lecture halls, student accommodations, libraries, and other communal spaces frequented by students within the designated universities. Research assistants contacted qualified students, explained the study's objective, and solicited volunteer participation. Eligibility requirements were confirmed prior to the presentation of the questionnaire.

A total of 910 undergraduate students were solicited for participation. Out of these, 850 respondents completed the questionnaires satisfactorily and were included in the final analysis, resulting in a response rate of 93.4%. Questionnaires with incomplete replies and significant missing data were omitted from the study.

Information permission was acquired from all subjects before data collection commenced. Participants were guaranteed confidentiality, anonymity, voluntary involvement, and the freedom to resign from the research at any point without repercussions. No personal information was gathered from the surveys.

2.5 Sample Size Calculation

This research used the Krejcie and Morgan (1970) sample size determination methodology to calculate sample size from a given population size with 95% confidence and 5% margin of error. University of Ghana (UG), Legon – 35,000 students, Ghana Institute of Management and Public Administration (GIMPA) – 3,500 students, Wisconsin International University College – 2,500 students, University of Professional Studies, Accra (UPSA) – a This estimated 50,000 undergraduates in the municipality.

The Krejcie and Morgan table gives a sample size of 381 for a population of 50,000, however adding a 10% buffer yielded 420.

The final sample size for this research was expanded to 850 respondents to improve statistical accuracy, subgroup analysis across institutions and academic levels, and conservatively limit non-response and missing-data risks. This enlarged sample enhanced the study's ability to discover connections between knowledge, attitudes, barriers, and contraceptive use while remaining possible within project resources.

2.6 Data Collection Techniques and Tools

This study obtained data using a standardized questionnaire that met research criteria. The questionnaire was designed to go from background information to questions on contraceptive knowledge, attitudes, and barriers.

First section of questionnaire collected background information to define respondents' socio-demographic profile and offer context for results interpretation. Age, gender, education, institution, and religion were considered. These characteristics helped identify demographic differences in contraceptive knowledge, attitudes, and usage.

According to the primary goal, the next part covered contraception. Respondents were tested on pills, condoms, injectables, implants, IUDs, and emergency contraception. The items assessed correct usage, effectiveness, side effects, and treatment sources.

The next section examined contraceptive views for the second aim. This section used Likert scales to examine respondents' contraceptive attitudes, beliefs, and feelings. It considered both positive and negative assessments, cultural and moral beliefs, and social approval or condemnation from friends, family, and society.

The last section examined contraceptive usage barriers for the third reason. Socio-cultural variables like stigma and religious restrictions, economic barriers like contraceptive costs, institutional barriers like inadequate privacy or inconvenient service hours, and personal barriers like fear of adverse effects or partner support were investigated.

2.7 Measurement of Study Variables

The questionnaire for the study was organized into four distinct sections: socio-demographic characteristics, knowledge regarding contraceptives, attitudes towards the use of contraceptives, and barriers to the utilization of contraceptives.

2.7.1 Knowledge of Contraceptives

Knowledge was assessed using 10 closed-ended items covering awareness of contraceptive methods, correct use of condoms and oral contraceptive pills, sources of contraceptives, knowledge of side effects, and emergency contraception. Correct responses were scored as 1, while incorrect or "not sure" responses were scored as 0, yielding a total score ranging from 0 to 10.

A score of 70% or higher (7–10 points) was classified as good knowledge, while scores below 70% were classified as poor knowledge. This threshold was adopted based on commonly applied criteria in public health knowledge assessments, where a score of 70% or above is considered indicative of adequate knowledge. The distribution of knowledge scores was examined prior to categorization.

The internal consistency reliability of the knowledge scale was acceptable (Cronbach's $\alpha = 0.81$).

2.7.2 Attitudes Toward Contraceptive Use

Attitudes toward contraceptive use were measured using 10 Likert-scale items rated from 1 (Strongly Disagree) to 5 (Strongly Agree). Negatively worded items were reverse coded prior to analysis, such that higher scores consistently reflected more favorable attitudes toward contraceptive use.

Composite attitude scores ranged from 10 to 50. The overall mean attitude score and standard deviation were calculated. For logistic regression analyses, respondents scoring above the sample mean were classified as having positive attitudes, whereas those scoring at or below the mean were classified as having negative attitudes. This approach was adopted to facilitate binary outcome modelling and has been used in previous cross-sectional behavioural studies.

The reliability of the attitude scale was high (Cronbach's $\alpha = 0.84$)..

2.7.3 Barriers to Contraceptive Use

The assessment of barriers to contraceptive use involved 9 items on a Likert scale, utilizing a five-point range from 1 = Strongly Disagree to 5 = Strongly Agree. The analyzed items identified various barriers such as financial constraints, apprehension regarding side effects, societal stigma, insufficient privacy, discouragement from partners, accessibility of services, and unfavourable attitudes from healthcare professionals.

Instances of barrier items included: "I am concerned about the potential side effects of contraceptive use" and "I have refrained from using contraceptives due to feelings of embarrassment or stigma."

Increased scores reflected a heightened perception of obstacles to contraceptive use. Composite scores were derived by aggregating responses from all barrier items. The reliability analysis conducted for the barrier scale resulted in Cronbach's alpha coefficient of $\alpha = 0.79$, which suggests an acceptable level of internal consistency.

2.8 Pretest and Fieldwork

Before the fieldwork commenced, the research instrument – a structured, self-administered questionnaire was pretested to verify its clarity, relevance, and reliability. Pretesting was conducted among a cohort of 100 undergraduates selected from a tertiary institution excluded from the final sample frame.

2.9 Data Handling and Analysis

Completed questionnaires were checked for completeness and consistency before data entry. Questionnaires with substantial missing data were excluded and replaced to maintain the target sample size. Each questionnaire was assigned a unique identification number, coded, and entered into the Statistical Package for the Social Sciences (SPSS) version 26.0 for analysis. Statistical significance was set at $p < 0.05$ with a 95% confidence level. Descriptive statistics, including frequencies, percentages, means, standard deviations, medians, and interquartile ranges, summarize respondents' characteristics and study variables. Chi-square tests assessed associations between categorical variables, independent-samples t-tests compared means between two groups, and one-way ANOVA compared mean scores across multiple groups. Binary logistic regression identified predictors of good contraceptive knowledge and positive attitudes. Variables with $p < 0.20$ in bivariate analyses and those identified from the literature were included in multivariable models. Odds ratios (ORs) with 95% confidence intervals (CIs) were reported, while model fit was assessed using the Hosmer–Lemeshow test and Nagelkerke R^2. Five-point Likert responses were dichotomized for Chi-square analyses to satisfy minimum expected cell count assumptions, whereas composite attitude scores were retained for regression analyses. Positive attitude was defined as a score greater than or equal to the sample mean because no validated cut-off existed. The study assessed knowledge, attitudes, and perceived barriers but did not measure actual contraceptive utilization.

2.10 Ethical Consideration

This research did comply with ethical norms regulating academic studies involving human participants. Ethical approval with ref (SPSG/MPH 225056305) was secured from the GIMPA Ethics Committee. A formal submission, comprising the research proposal, permission forms, and data collecting instruments, was presented for approval to confirm compliance with all ethical standards. Participation in the study was completely voluntary, and informed permission was obtained from all participants prior to data collection.

3. Results

3.1 Socio-Demographic Profile of Respondents

Table 1 shows 850 respondents' socio-demographics. Many students were young, with 21.5% aged 17–19 and 17.2% aged 20–22. A significant number of senior students were represented, including 16.0% aged 32–35 and 15.9% aged 26–28.

Over half of respondents (53.4%) were female, 44.6% were male, and 2.0% did not identify their gender. Year 2 pupils made up the biggest group (29.2%), followed by Year 1 (24.2%), Year 3 (23.9%), and Year 4 and above (22.7%). With 595 students (70.0%), the University of Ghana (UG) contributed the most. The University of Professional Studies, Accra (UPSA) had 153 respondents (18.0%), GIMPA had 60 (7.0%), and Wisconsin International University College had 42 (5.0%). Christianity was most prevalent (68.9%), followed by Islam (17.4%). Most were unmarried (61.4%) and lived in hostels (67.4%), echoing Ghanaian student living conditions (Table 1).

Table 1: Socio-demographic Characteristics of Respondents (N = 850).

Variable	Frequency (n)	Percent (%)
Age (years)		
17–19	183	21.5
20–22	146	17.2
23–25	119	14.0
26–28	135	15.9
29–31	131	15.4
32–35	136	16.0
Gender		
Male	379	44.6
Female	454	53.4
Prefer not to say	17	2.0
Year of Study		
Year 1	206	24.2
Year 2	248	29.2
Year 3	203	23.9
Year 4+	193	22.7
Institution		
University of Ghana (UG)	595	70.0
UPSA	153	18.0
GIMPA	60	7.1
Wisconsin Int'l University College	42	4.9
Qualification		

Variable	Frequency (n)	Percent (%)
Diploma	185	21.8
Degree	482	56.7
Masters	96	11.3
PhD	40	4.7
Other	47	5.5
Programme of Study		
Nursing	82	9.6
Medicine	92	10.8
Pharmacy	91	10.7
Public Health	89	10.5
Engineering	90	10.6
Business Administration	101	11.9
Computer Science	97	11.4
Education	105	12.4
Law	103	12.1
Religion		
Christianity	586	68.9
Islam	148	17.4
Traditional	56	6.6
None	52	6.1
Other	8	0.9
Marital Status		
Single	522	61.4
Married	136	16.0
In a relationship	156	18.4
Divorced	9	1.1
Widowed	7	0.8
Other	20	2.4
Residence		
Hostel	573	67.4
Family house	240	28.2
Other	37	4.4

3.2 Participants' Knowledge of Contraceptives

Table 2 shows that 92% of respondents heard about contraceptives, whereas 8% had no previous knowledge. Condoms (82.6%), tablets (71.9%), and injectables (58.5%) were the most often stated methods, whereas implants (48.6%) and IUDs (42.9%) were less well-known. Emergency contraception was recognized by 50.4%, but withdrawal (34.1%) and calendar (32.0%) were less familiar (Figure 1).

Majority 80.5% of respondents knew where to get contraception, indicating great accessibility. However, weight changes (36.7%), nausea (33.6%), and irregular bleeding (30.5%) were still misunderstood, and almost a quarter (22.8%) did not know any adverse effects.

Condoms (32.0%) and tablets (18.4%) were preferred, whereas IUDs (12.9%) and implants (11.5%) were less popular. Over half (58%) got contraceptive instruction in school, and health professionals (32.5%) were the most trusted source. The fact that just 50.4% thought emergency contraception was safe suggests knowledge gaps.

Table 2: Knowledge of Contraceptives among Respondents (N = 850).

Variable	Category	Frequency (n)	Percentage (%)
Heard of contraceptives	Yes	782	92.0
	No	68	8.0
Self-rated knowledge	Very good	152	17.9
	Good	261	30.7
	Fair	275	32.4
	Poor	124	14.6
	No knowledge	38	4.4
Know correct condom use	Yes	621	73.1
	No	127	14.9
	Not sure	102	12.0
Know correct pill use	Yes	545	64.1
	No	171	20.1
	Not sure	134	15.8
Know where to obtain contraceptives	Yes	684	80.5
	No	166	19.5
Awareness of side effects	Nausea	286	33.6
	Weight change	312	36.7
	Irregular bleeding	259	30.5
	Infertility	241	28.4
	Don’t know	194	22.8
Most effective method (perceived)	Condoms	272	32.0
	Pills	156	18.4
	Injectables	122	14.4
	Implants	98	11.5
	IUDs	110	12.9
	Emergency contraception	42	4.9
	Other	50	5.9
Taught in school	Yes	493	58.0
	No	357	42.0
Main source of information	Friends	132	15.5
	Media	148	17.4
	Health professional	276	32.5
	Family	101	11.9
	Internet	157	18.5

Variable	Category	Frequency (n)	Percentage (%)
	Other	36	4.2
Believe emergency contraception is safe	Yes	428	50.4
	No	214	25.2
	Not sure	208	24.5

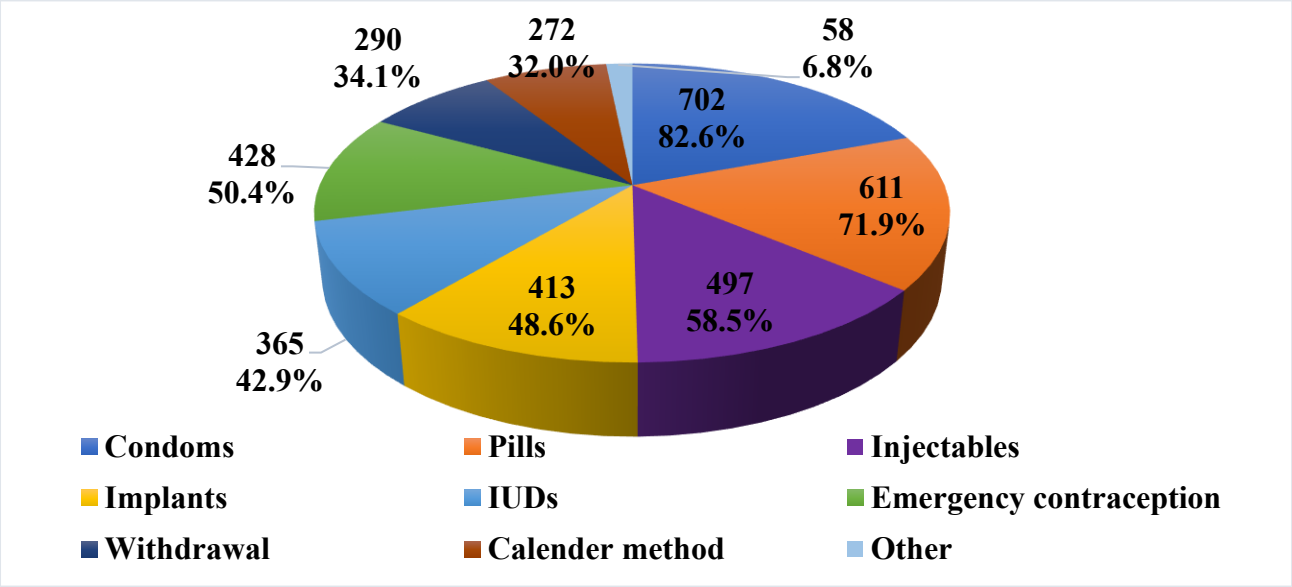


Figure 1: Knowledge on contraceptives methods among respondents.

3.3 Distribution and Classification of Composite Knowledge, Attitude, and Barrier Scores

Table 3 presents the distribution of respondents' composite knowledge, attitude, and barrier scores regarding contraceptive use. The knowledge score ranged from 0 to 10, with respondents scoring 70% or higher (7–10 points) classified as having good knowledge, while those scoring below 70% were classified as having poor knowledge. The 70% threshold was adopted based on commonly used criteria in public health knowledge assessments.

The attitude score ranged from 10 to 50, with higher scores reflecting more favourable attitudes toward contraceptive use. Respondents scoring above the overall mean attitude score were categorized as having positive attitudes, whereas those scoring at or below the mean were classified as having negative attitudes.

Barrier scores ranged from 9 to 45, with higher scores indicating stronger perceived barriers to contraceptive utilization. The distribution of these composite scores was examined prior to conducting inferential statistical analyses.

Table 3. Distribution and Classification of Composite Knowledge, Attitude, and Barrier Scores Among Respondents (N = 850).

Variable	Mean ± SD*	Median (IQR)*	Range	Classification Criteria
Knowledge Score	6.9 ± 1.8	7 (6–8)	0–10	Poor: 0–6, Good: 7–10
Attitude Score	34.8 ± 5.6	35 (31–39)	10–50	Negative: ≤34, Positive: >34
Barrier Score	22.7 ± 6.2	23 (18–27)	9–45	Lower scores = fewer barriers, Higher scores = greater perceived barriers

3.4 Classification of Respondents Based on Composite Scores

Table 4 shows the categorization of respondents according to their knowledge and attitude scores. Most respondents demonstrated good knowledge of contraceptives, while the remaining respondents were classified as having poor knowledge. Similarly, respondents were categorized as having either positive or negative attitudes toward contraceptive use based on the overall mean attitude score. These classifications were subsequently used in the chi-square and logistic regression analyses to identify factors associated with contraceptive knowledge and attitudes.

Participants were categorized as having positive or negative attitudes using the sample means of the composite attitude score as the classification threshold.

Table 4. Classification of Respondents According to Knowledge and Attitude Categories (N = 850)

Variable	Category	Frequency (n)*	Percentage (%)
Knowledge	Good Knowledge	529	62.2
	Poor Knowledge	321	37.8
Attitude	Positive Attitude	498	58.6
	Negative Attitude	352	41.4

Note: Positive attitude was defined as a composite attitude score greater than or equal to the sample mean, while negative attitude was defined as a score below the sample mean.

3.5 Association Between Socio-demographic Variables and Knowledge

Table 5 compares respondents' socio-demographic variables to their contraception knowledge. Females were more likely than men to have heard about contraception ($p = 0.009$). Age significantly correlated with self-rate knowledge ($p = 0.014$), with older students reporting better knowledge than younger ones. Institution of study was also substantially associated to whether respondents had learned about contraception in school ($p = 0.002$), indicating reproductive health education varies among colleges. Finally, Christians were more likely than other religious groups to consider emergency contraception safe ($p = 0.033$). These data show that demographic and institutional variables affect contraceptive knowledge.

Table 5: Chi-square Test Results between socio-demographic factors and contraceptive knowledge

Association	χ^2	df	p-value
Sex × Heard of contraceptives (Yes/No)	6.84	1	0.009
Age × Self-rated knowledge (High vs. Low)	14.22	5	0.014
Institution × Taught in school (Yes/No)	18.37	3	0.002
Religion × Belief in safety of emergency contraception	10.45	8	0.033

3.6 Predictors of Good Knowledge

A binary logistic regression model predicting excellent contraceptive knowledge is shown in Table 6. Females were 1.52 times more likely than men to have excellent knowledge (p = 0.008). Age was positively linked with knowledge (OR = 1.08, p = 0.012), implying enhanced knowledge each year of age. Knowledge was substantially predicted by years of study (p = 0.044), with third- and fourth-year students being more knowledgeable. Students from the University of Ghana had considerably greater chances of strong knowledge than those from other institutions (OR = 1.67, p = 0.003). Religion, marital status, and residence were not important. Overall, the model explains 22% of knowledge variation (Nagelkerke $R^2 = 0.22$) and shows strong fit (Hosmer–Lemeshow p = 0.61). These findings show that sex, age, academic level, and institutional environment influence students' contraceptive awareness.

Knowledge (high vs. poor) was the dependent variable in binary logistic regression.

Table 6: Logistic Regression Results and Predictors of Good Knowledge.

Predictor	OR	95% CI	p-value
Sex (Female vs. Male)	1.52	1.11–2.09	0.008
Age (per year)	1.08	1.02–1.15	0.012
Year of Study (3rd/4th vs. 1st/2nd)	1.41	1.01–1.96	0.044
Institution (UG vs. others)	1.67	1.19–2.34	0.003
Religion (Christian vs. others)	1.23	0.87–1.74	0.231
Marital Status (Single vs. others)	0.94	0.65–1.37	0.766
Residence (Hostel vs. others)	1.28	0.91–1.80	0.152

Covariates entered the regression model included sex, age, year of study, institution, religion, marital status, and residence status. Good knowledge = 1, Poor knowledge = 0, Positive attitude = 1, Negative attitude = 0, Female = 1, Male = 0 (reference), UG = 1, Other institutions = 0 (reference), Christian = 1, Other religions = 0 (reference), Hostel = 1, Other residence = 0 (reference), Single = 1, Other marital status = 0 (reference).

3.7 Participants' Attitudes towards the use of Contraceptives

As seen in Table 7, respondents largely supported contraception. Contraceptives' role in preventing unplanned pregnancies and STDs was most agreed upon (M = 4.41, SD = 0.82) and 4.28, SD = 0.91). The view that contraceptive usage shows responsibility was also strongly supported (M = 4.36, SD = 0.87).

Contraceptive usage encourages promiscuity was mostly disagreed with (M = 2.15, SD = 1.12), showing that most students do not see it as immoral. Religious (M = 2.48, SD = 1.21) and cultural (M = 2.32, SD = 1.17) discouragements had modest mean ratings, showing they may

affect a minority but are not dominating obstacles. Friends and family supported contraceptive usage somewhat (M = 3.78, SD = 1.03) and M = 3.64, SD = 1.15). Open communication was also shown by respondents' comfort discussing contraception with partners (M = 3.89, SD = 1.08).

Table 7: Mean Attitude Scores Toward Contraceptive Use (N = 850).

Statement	Mean	SD
Using contraceptives is important for preventing unwanted pregnancy	4.41	0.82
Using contraceptives is important for preventing STIs	4.28	0.91
Contraceptives should be used even in committed relationships	3.92	1.04
Using contraceptives shows responsibility	4.36	0.87
Contraceptive use promotes promiscuity	2.15	1.12
My religious beliefs discourage contraceptive use	2.48	1.21
My cultural beliefs discourage contraceptive use	2.32	1.17
My friends support the use of contraceptives	3.78	1.03
My family supports the use of contraceptives	3.64	1.15
I feel comfortable discussing contraceptives with my partner	3.89	1.08

3.8 Associations between Socio-demographics and Attitudes Toward Contraceptive Use

The Chi-square tests demonstrated that gender, religion, and age significantly influenced attitudes toward contraceptive use. Female students were more likely to associate contraceptive use with responsibility ($p = 0.001$), while older students were more comfortable discussing contraceptives with their partners ($p = 0.012$). Religious affiliation was a strong determinant, with Christians less likely to report religious discouragement compared to Muslims and adherents of traditional beliefs ($p < 0.001$).

Table 8: Chi-square Associations between Socio-demographics and Attitudes Toward Contraceptive Use.

Variable	Attitude Item Tested	χ^2	df	p-value
Gender	"Using contraceptives shows responsibility"	10.84	1	0.001
Religion	"My religious beliefs discourage contraceptive use"	26.47	8	<0.001
Age group	"I feel comfortable discussing contraceptives with my partner"	8.93	5	0.012

3.9 Predicting Positive Attitudes Toward Contraceptives

The logistic regression further confirmed that knowledge strongly predicted positive attitudes. Students with higher contraceptive knowledge had almost double the odds (OR = 1.88, $p < 0.001$) of holding favorable attitudes compared to those with lower knowledge. Female gender (OR = 1.42, $p = 0.019$) and increasing age (OR = 1.06, $p = 0.007$) were also significant predictors of positive attitudes. Religious affiliation, however, remained an important barrier, with some groups showing lower acceptance of contraceptive use.

Table 9: Logistic Regression Predicting Positive Attitudes Toward Contraceptives.

Predictor	OR	95% CI	p-value
High Knowledge	1.88	1.39 – 2.55	<0.001
Female (vs Male)	1.42	1.10 – 1.94	0.019
Age	1.06	1.02 – 1.11	0.007
Religion (Ref = Christianity)	—	—	0.031

Nagelkerke $R^2 = 0.19$, Hosmer–Lemeshow p = 0.57. Covariates included knowledge level, sex, age, religion, and institution. Good knowledge = 1, Poor knowledge = 0, Positive attitude = 1, Negative attitude = 0, Female = 1, Male = 0 (reference), UG = 1, Other institutions = 0 (reference), Christian = 1, Other religions = 0 (reference), Hostel = 1, Other residence = 0 (reference), Single = 1, Other marital status = 0 (reference).

3.10 Barriers to Contraceptive Use

Table 10 shows that the fear of side effects was the most prominent barrier to contraceptive use among respondents (M = 3.89, SD = 1.03), indicating a widespread concern that could discourage uptake. Cost (M = 3.21, SD = 1.12) and lack of privacy at service points (M = 3.05, SD = 1.09) were also reported as moderate barriers. Other issues such as embarrassment/stigma (M = 2.84, SD = 1.15), inconvenient service hours (M = 2.76, SD = 1.18), and partner discouragement (M = 2.67, SD = 1.21) were rated lower but still notable. Structural barriers such as denial of access (M = 2.43, SD = 1.07), limited availability (M = 2.55, SD = 1.13), and negative judgment from health workers (M = 2.71, SD = 1.15) were generally not perceived as strong deterrents.

Table 10: Mean Scores on Barriers to Contraceptive Use (N = 850).

Statement	Mean	SD
I have avoided using contraceptives because of their cost	3.21	1.12
I have avoided using contraceptives because of embarrassment or stigma	2.84	1.15
I have avoided using contraceptives due to lack of privacy	3.05	1.09
I have avoided using contraceptives because of inconvenient hours	2.76	1.18
I fear the possible side effects of contraceptive use	3.89	1.03
My partner has discouraged me from using contraceptives	2.67	1.21
I have been denied access to contraceptives at a health facility	2.43	1.07
Contraceptives are difficult to find in my area	2.55	1.13
I have been judged negatively by a health worker for seeking contraceptives	2.71	1.15

3.11 Influence of Socio-demographic Factors on Barriers

Chi-square analysis further highlighted the influence of socio-demographic factors on barriers. Gender was significantly associated with stigma (χ^2=15.8, p=0.007) and fear of side effects (χ^2=16.5, p=0.005), with female students reporting higher levels of concern. Religion influenced privacy concerns (χ^2=11.3, p=0.024) and experiences of judgment by health workers (χ^2=12.8, p=0.021), indicating that cultural and faith-based norms shape contraceptive perceptions. Age and year of study were linked with cost and service access, suggesting that maturity and academic exposure may reduce or exacerbate perceived obstacles.

Table 11: Chi-Square Tests of Socio-Demographics vs Barriers.

Barrier Variable	Significant Associations (χ^2, p-value)
Cost of contraceptives	Age (χ^2=10.6, p=0.031), Year of Study (χ^2=12.2, p=0.019)
Embarrassment/stigma	Gender (χ^2=15.8, p=0.007)
Lack of privacy	Religion (χ^2=11.3, p=0.024)
Service hours inconvenient	Year of Study (χ^2=13.1, p=0.014)
Fear of side effects	Gender (χ^2=16.5, p=0.005), Age (χ^2=12.7, p=0.021)
Partner discouragement	Marital status (χ^2=14.2, p=0.018)
Denied access at facility	Non-significant
Difficulty finding contraceptives	Age (χ^2=10.1, p=0.039)
Judged by health worker	Religion (χ^2=12.8, p=0.021)

3.12 Key Predictors of Barriers to Contraceptive Use

Regression analysis demonstrated that knowledge and positive attitudes significantly reduced perceived barriers (β = -0.32, p=0.001, β = -0.27, p=0.004, respectively). Conversely, being female, older, and belonging to certain religious groups increased the likelihood of perceiving barriers. The model explained 28% of the variance in barrier perception, underscoring the combined role of individual knowledge, attitudes, and socio-cultural influences.

Table 12: Regression of Knowledge & Attitudes on Barriers

Predictor	β (Beta Coefficient)	Std. Error	p-value
Knowledge Score	-0.32	0.09	0.001
Attitude Score	-0.27	0.11	0.004
Age	0.08	0.04	0.046
Gender (Female=1)	0.21	0.07	0.002
Religion (Christian vs Others)	0.19	0.08	0.014

Model Fit: Adjusted R^2 = 0.28, F (5,844) =16.7, p<0.001. Predictors entered into the model included knowledge score, attitude score, age, gender, and religion.

4. Discussion

Recent evidence from Ghana and sub-Saharan Africa continues to demonstrate relatively low awareness and uptake of long-acting reversible contraceptives (LARCs) among young people despite their high effectiveness. Studies have shown that knowledge of LARC methods concerns about side effects, and misconceptions regarding fertility remain important determinants of contraceptive choice among adolescents and young adults. Furthermore, evidence from Ghana indicates that adequate knowledge significantly increases the likelihood of LARC uptake, highlighting the importance of targeted educational interventions and counselling services. Similar findings across sub-Saharan Africa suggest that improving knowledge and addressing misconceptions may contribute to increased acceptance of highly effective contraceptive methods among young populations.

4.1 Socio-demographic Characteristics

Respondent socio-demographic factors help explain contraceptive knowledge, attitudes, and obstacles. Most students were 18–25, characteristic of Ghanaian postsecondary demographics (Ghana Statistical Service, 2021). Due to their higher risk of unwanted births and hazardous sexual behaviour, young people need accessible contraceptive information (World Health Organization, 2012).

The gender distribution was somewhat female, corresponding with enrollment patterns in various Ghanaian institutions (National Accreditation Board, 2020). This matters since reproductive health interventions in Ghana focus more on women than men, raising their contraceptive knowledge (Apanga et al., 2020, Nyarko, 2015).

As predicted for their age, most respondents were single. However, the prevalence of unmarried adolescents underlines the need to expand family planning strategies that address contraception stigma outside marriage (Gimbel et al., 2022). In some countries, clinicians judge unmarried young individuals seeking contraception (Sedgh et al., 2016).

Seniors reported more reproductive health awareness. In other sub-Saharan African countries, education increases reproductive health literacy (Kabiru et al., 2013). Students at major campuses like the University of Ghana showed increased awareness, possibly owing to stronger peer networks and health programs (Ghana Statistical Service, 2021).

Religion was controlled by Christianity and Islam, which heavily affect contraception. Premarital sex is discouraged in religion, which influences contraceptive use (Boakye et al., 2025). Finally, most respondents lived in hostels, where peer influence and autonomy may promote sexual activity, compared to family dwellings where autonomy may be more limited (Boamah et al., 2014).

4.2 Knowledge of Contraceptives

This study demonstrated high awareness of contraceptives among undergraduate students, particularly regarding condoms, pills, and injectables. However, awareness of long-acting reversible contraceptives such as implants and intrauterine devices remained comparatively lower. Similar findings have been reported among Ghanaian university students, where awareness of commonly used methods was high, but detailed understanding of long-acting methods remained limited (Appiah-Agyekum & Kayi, 2013, Hagan & Buxton, 2012).

Despite the generally high awareness levels, misconceptions regarding side effects such as infertility, weight gain, and irregular bleeding persisted among respondents. This suggests that awareness alone may not necessarily translate into accurate contraceptive knowledge. Previous studies in Ghana and other sub-Saharan African countries similarly reported that students often possess basic awareness of contraceptives but lack adequate understanding of proper use, effectiveness, and side effects (Semachew et al., 2018, Bongongo & Govender, 2019).

The study further identified significant associations between socio-demographic factors and contraceptive knowledge. Female students, older respondents, and students in higher academic levels demonstrated better contraceptive knowledge. Institutional differences were also observed, with students from larger institutions reporting greater exposure to reproductive health education. These findings suggest that academic exposure, maturity, and access to institutional health education programs contribute to improved contraceptive awareness (Kabiru et al., 2013, Tenkorang et al., 2021).

The findings may also be interpreted through the Health Belief Model. Students with higher levels of contraceptive knowledge are more likely to appreciate both the benefits of

contraceptive use and the risks associated with unprotected sexual activity. Increased knowledge may therefore reduce misconceptions and perceived barriers, thereby promoting acceptance and utilization of contraceptive methods (Semachew et al., 2018, Apanga et al., 2020).

4.3 Attitudes Toward Contraceptive Use

Respondents generally expressed positive attitudes toward contraceptive use, particularly regarding its role in preventing unintended pregnancies and sexually transmitted infections. Most participants also agreed that contraceptive use reflects responsible behavior. Similar positive attitudes toward contraceptive use among young adults have been reported in previous studies conducted in Ghana and other African countries (Agbeno et al., 2021, Bongongo & Govender, 2019).

Religious and cultural beliefs, however, continued to influence perceptions toward contraceptive use among some respondents. Female students and older participants were more likely to demonstrate favorable attitudes and greater comfort discussing contraceptives with partners. These findings are consistent with previous studies showing that gender, age, and religious affiliation significantly shape reproductive health attitudes among young adults (Adegboyega, 2019, Nyarko, 2015, Boakye et al., 2025).

Regression analysis further showed that students with higher contraceptive knowledge were significantly more likely to express positive attitudes toward contraceptive use. This finding highlights the importance of accurate reproductive health education in improving perceptions and reducing misconceptions surrounding contraceptives. Similar relationships between knowledge and positive attitudes have been documented among reproductive-age populations in Ghana and other sub-Saharan African settings (Semachew et al., 2018, Koroma et al., 2022).

The observed relationship between knowledge and positive attitudes is consistent with the Theory of Planned Behavior. According to the theory, favorable attitudes toward health behavior increase the likelihood of behavioural intention and subsequent adoption of that behavior. The finding that students with greater contraceptive knowledge were more likely to report positive attitudes suggests that educational interventions may strengthen behavioural intentions toward contraceptive use (Agbeno et al., 2021, Apanga et al., 2020).

4.4 Barriers to Contraceptive Use

Although respondents demonstrated relatively high knowledge and generally positive attitudes toward contraceptives, several barriers to utilization were identified. Fear of side effects emerged as the most prominent barrier, followed by cost and concerns regarding privacy. These findings suggest that psychosocial and personal concerns may exert a stronger influence on contraceptive decision-making than structural access barriers among undergraduate students. Similar concerns have been reported in studies conducted in Ghana, Ethiopia, and South Africa (Semachew et al., 2018, Modey, 2018, Bongongo & Govender, 2019).

Interestingly, barriers related to service availability were relatively less pronounced. Respondents generally reported low levels of denial of access to contraceptives, limited difficulty in obtaining contraceptives, and comparatively lower levels of negative judgment from healthcare providers. This finding may reflect improvements in the availability of reproductive health services and contraceptive commodities within urban settings such as the Ayawaso West Municipality (Ghana Statistical Service, 2022, World Health Organization, 2019).

However, concerns regarding privacy, stigma, and fear of side effects remained important deterrents. These findings indicate that future interventions should focus not only on improving service availability but also on addressing misconceptions about contraceptive side effects, strengthening confidentiality within service delivery settings, and reducing stigma associated with contraceptive use among young adults. Similar barriers have been identified among university students and women of reproductive age in Ghana and other African countries (Appiah-Agyekum & Kayi, 2013, Koroma et al., 2022, Modey, 2018).

The prominence of fear of side effects, stigma, and privacy concerns further supports the Health Belief Model, which identifies perceived barriers as key determinants of health behaviour. Although access-related barriers appeared relatively low, psychosocial concerns remained substantial and may discourage contraceptive uptake despite adequate availability of services. Addressing these perceived barriers may therefore be critical for improving contraceptive utilization among undergraduate students (Semachew et al., 2018, Apanga & Adam, 2015).

Although statistically significant associations were identified, these findings should be interpreted cautiously because the regression analyses did not adjust for clustering of participants within institutions. Consequently, some reported p-values may be slightly optimistic, and future studies should employ multilevel analytical approaches to account for institutional-level effects.

Although this study examined factors influencing knowledge, attitudes, and perceived barriers related to contraceptive utilization, actual contraceptive use was not assessed. Consequently, the findings should not be interpreted as evidence of contraceptive utilization behaviours among undergraduate students. Future studies should incorporate behavioural measures such as current contraceptive use, previous use, frequency of use, and preferred contraceptive methods to provide a more comprehensive understanding of contraceptive practices.

4.5 Practical and Policy Implications

The findings of this study have important implications for universities, healthcare providers, and policymakers. First, tertiary institutions should strengthen reproductive health education through orientation programmes, peer education initiatives, and periodic sexual and reproductive health awareness campaigns. Attention should be given to improving students' knowledge of long-acting reversible contraceptive methods and addressing misconceptions regarding side effects and infertility.

Second, university health services and nearby health facilities should expand access to confidential and youth-friendly contraceptive counselling services. Measures such as dedicated student reproductive health clinics, flexible service hours, and enhanced privacy during consultations may help address concerns regarding confidentiality and stigma.

Third, healthcare professionals should receive periodic training on youth-friendly service delivery and effective contraceptive counselling to ensure that students receive accurate information regarding contraceptive effectiveness, safety, and potential side effects.

Finally, policymakers and reproductive health stakeholders should collaborate with tertiary institutions to integrate comprehensive reproductive health education into student support programmes and promote evidence-based communication strategies through digital platforms frequently accessed by young adults. Such interventions may contribute to improved contraceptive knowledge, more positive attitudes, and reduced barriers to contraceptive utilization among undergraduate students.

5. Conclusion

This study examined the knowledge, attitudes, and barriers to contraceptive use among undergraduates in selected tertiary institutions in Ghana. Findings revealed high awareness of contraceptives, with condoms, pills, and injectables being the best-known methods. However, knowledge of long-acting reversible methods such as IUDs and implants remained low, and misconceptions about side effects persisted. Attitudes toward contraceptive use were generally positive, with students recognizing their importance in preventing pregnancies and STIs, though negative perceptions rooted in religious and cultural beliefs continued to shape views. Barriers identified included fear of side effects, cost, stigma, and lack of privacy at service delivery points.

While structural barriers such as denial of services and contraceptive availability appeared relatively limited, psychosocial barriers including fear of side effects, stigma, and concerns regarding privacy remained significant obstacles to contraceptive utilization. Interventions should therefore prioritize accurate reproductive health education, confidentiality in service delivery, and stigma reduction alongside continued efforts to improve access to contraceptive services.

6. Limitations

Although respondents were recruited from multiple tertiary institutions, the analyses did not account for the clustering of participants within institutions. Consequently, the assumption of independence of observations may have been violated, potentially resulting in underestimated standard errors and inflated statistical significance. Therefore, the reported p-values should be interpreted with caution. Future studies should employ multilevel (mixed-effects) logistic regression models or cluster-robust standard errors to account for institutional-level clustering and improve the precision of statistical inference.

References

Adegboyega, L. O. (2019). Attitude of married women towards contraceptive use in Ilorin Metropolis, Kwara State, Nigeria. *African Health Sciences, 19*(2), 1875–1886. https://doi.org/10.4314/ahs.v19i2.10

Agbeno, E. K., Osarfo, J., Anane-Fenin, B., Achampong, E. K., Neequaye, N. A., Opoku, D. A., Aliyu, M., Ken-Amoah, S., Ofori, A. A., & Ashong, J. A. (2021). Attitudes and practices of healthcare professionals and clinical medical students on contraception: A cross-sectional study in Cape Coast, Ghana. *International Journal of Reproductive Medicine, 2021*, 1–11. https://doi.org/10.1155/2021/6631790

Ahinkorah, B. O., Budu, E., Aboagye, R. G., Agbaglo, E., Arthur-Holmes, F., Adu, C., Archer, A. G., Aderoju, Y. B. G., & Seidu, A.-A. (2021). Factors associated with modern contraceptive use among women with no fertility intention in sub-Saharan Africa: Evidence from cross-sectional surveys of 29 countries. *Contraception and Reproductive Medicine, 6*(1), 22. https://doi.org/10.1186/s40834-021-00165-6

Ameh, S., Owoaje, E., Oyo-Ita, A., Kabiru, C. W., Akpet, O. E. O., Etokidem, A., Enembe, O., & Ekpenyong, N. (2016). Barriers to and determinants of the use of intermittent preventive treatment of malaria in pregnancy in Cross River State, Nigeria: A cross-sectional study. *BMC Pregnancy and Childbirth, 16*(1). https://doi.org/10.1186/s12884-016-0883-2

Anorkor, L. J. (2022). *Factors associated with use of family planning services among females (15–49 years) at Kpone Katamanso Municipality in the Greater Accra Region of Ghana* [Master's dissertation, Ensign College of Public Health].

Apanga, P. A., & Adam, M. A. (2015). Factors influencing the uptake of family planning services in the Talensi District, Ghana. *Pan African Medical Journal, 20*. https://doi.org/10.11604/pamj.2015.20.10.5301

Apanga, P. A., Kumbeni, M. T., Ayamga, E. A., Ulanja, M. B., & Akparibo, R. (2020). Prevalence and factors associated with modern contraceptive use among women of reproductive age in 20 African countries: A large population-based study. *BMJ Open, 10*(9), e041103. https://doi.org/10.1136/bmjopen-2020-041103

Appiah-Agyekum, N. N., & Kayi, E. A. (2013). Students' perceptions of contraceptives in University of Ghana. *Journal of Family & Reproductive Health, 7*(1), 39–44.

Boakye, P., Adaboh, E., Lomotey, A. Y., Tetteh, J., Diji, A. K.-A., & Bam, V. B. (2025). Sexual activity and contraceptive use among adolescents: A descriptive survey in a Ghanaian municipality. *PLOS Global Public Health, 5*(8), e0005039. https://doi.org/10.1371/journal.pgph.0005039

Boamah, E. A., Asante, K. P., Mahama, E., Manu, G., Ayipah, E., Adeniji, E., & Owusu-Agyei, S. (2014). Use of contraceptives among adolescents in Kintampo, Ghana: A cross-sectional study. *Open Access Journal of Contraception, 5*, 7–15. https://doi.org/10.2147/OAJC.S56485

Bongongo, T., & Govender, I. (2019). Knowledge, attitudes and practices of contraceptive methods among women seeking voluntary termination of pregnancy at Jubilee Hospital, Pretoria, South Africa. *African Journal of Primary Health Care & Family Medicine, 11*(1), e1–e5. https://doi.org/10.4102/phcfm.v11i1.1919

Boonstra, H. (2014). *Addressing the needs of adolescents worldwide: Contraceptive access and use*. Guttmacher Institute.

Darroch, J. E., Woog, V., Bankole, A., & Ashford, L. S. (2016). *Costs and benefits of meeting the contraceptive needs of adolescents*. Guttmacher Institute.

DHS Program. (2015). *2014 demographic and health survey key findings: Ghana*. DHS Program.

Ghana Statistical Service. (2015). *Ghana demographic and health survey 2014*. Ghana Statistical Service.

Ghana Statistical Service. (2021). *2021 population and housing general report*. Ghana Statistical Service.

Ghana Statistical Service. (2022). *Ghana demographic and health survey 2022 key indicators report*. Ghana Statistical Service.

Gimbel, S., Baynes, C., Tilahun, H. A., Hirschhorn, L., Inguane, C., Kyei, P., Abate, B., Belay, H., Gebeyehu, A., Wondarad, Y., Ahmed, M., Simanesew, A., Ayele, W., Kebede, D., Neagash, G., Solomon, T., Mohammedsani, A., Awoonor-Williams, J. K., Kachur, S. P., & Tembe, S. (2022). Barriers and facilitators to data use for decision making: The experience of the African Health Initiative partnerships in Ethiopia, Ghana, and Mozambique. *Global Health: Science and Practice, 10*, 1–21. https://doi.org/10.9745/GHSP-D-21-00666

Hagan, J. E., & Buxton, C. (2012). Contraceptive knowledge, perceptions and use among adolescents in selected senior high schools in the Central Region of Ghana. *Journal of Sociological Research, 3*(2). https://doi.org/10.5296/jsr.v3i2.2311

Kabiru, C. W., Izugbara, C. O., & Beguy, D. (2013). The health and wellbeing of young people in sub-Saharan Africa: An under-researched area? *BMC International Health and Human Rights, 13*(1), 11. https://doi.org/10.1186/1472-698X-13-11

Koroma, A. H., Fofanah, E. Y., Osborne, A., Williams, S. M. T., Bangura, C., Musa, J. A., Johnny, J., Saidu, J. B., & Bakarr, I. A. (2022). Assessment of knowledge, attitude and practice on family planning among women of reproductive age at hospitals and clinic centers in the rural Western Sierra Leone. *African Journal of Reproductive Health, 26*(6), 15–21. https://doi.org/10.29063/ajrh2022/v26i6.2

Mbilinyi, L. B., & Moshiro, C. (2020). *A cross-sectional study on contraceptive knowledge, attitude and practice among teenage girls in secondary schools in Wanging'ombe District, Njombe Region*. https://doi.org/10.21203/rs.3.rs-25841/v1

Modey, E. J. (2018). *Contraceptive discontinuation and switching among women in the Shai-Osudoku and Ningo Prampram districts, Ghana* [Master's thesis, University of Ghana]. http://ugspace.ug.edu.gh

Morhe, E. K. S., Gbagbo, F. Y., & Morhe, R. A. S. (2023). Self-managed abortions in Ghana: A health policy framework analysis. *Public Health Challenges, 2*(2). https://doi.org/10.1002/puh2.101

National Accreditation Board. (2020). *Tertiary education annual statistics report 2019*. National Accreditation Board.

Nyarko, S. H. (2015). Prevalence and correlates of contraceptive use among female adolescents in Ghana. *BMC Women's Health, 15*(1), 60. https://doi.org/10.1186/s12905-015-0221-2

Nzioka, C. (2019). Factors influencing male interest in family planning in Kenya. *African Journal of Reproductive Health, 2*(2), 122–141.

Odimegwu, C. O., De Wet, N., Adedini, S. A., Nzimande, N., Appunni, S., & Dube, T. (2017). Family demography in sub-Saharan Africa: A systematic review of family research. *African Population Studies, 31*(1). https://doi.org/10.11564/31-1-1023

Sedgh, G., Ashford, L. S., & Hussain, R. (2016). *Unmet need for contraception in developing countries: Examining women's reasons for not using a method*. Guttmacher Institute. https://www.guttmacher.org/report/unmet-need-for-contraception-in-developing-countries

Semachew, K. A., Tarekegn, M., & Embiale, N. (2018). Knowledge, attitude and practice towards family planning among reproductive age women in a resource-limited setting of Northwest Ethiopia. *BMC Research Notes, 11*(1), 577. https://doi.org/10.1186/s13104-018-3689-7

Tenkorang, E. Y., Amo-Adjei, J., & Kumi-Kyereme, A. (2021). Assessing components of Ghana's comprehensive sexuality education on the timing of sexual debut among in-school youth. *Youth & Society, 53*(8), 1259–1286. https://doi.org/10.1177/0044118X20930891

Tetteh, P., & Sackey, J. A. (2024). *Barriers to the use of modern contraception among kayayei in Madina Market* [Undergraduate dissertation, University of Ghana].

Tumlinson, K., Speizer, I. S., Archer, L. H., & Behets, F. (2013). Simulated clients reveal factors that may limit contraceptive use in Kisumu, Kenya. *Global Health: Science and Practice, 1*(3), 407–416. https://doi.org/10.9745/GHSP-D-13-00075

United Nations Educational, Scientific and Cultural Organization. (2018). *International technical guidance on sexuality education: An evidence-informed approach*. UNESCO.

World Health Organization. (2012). *Repositioning family planning in reproductive health services: Framework for accelerated action, 2005–2014*. World Health Organization.

World Health Organization. (2019). *Contraception*. World Health Organization.