

Research Article

Knowledge and Attitudes Towards Emergency Contraceptives among Female Undergraduate Students in Public Universities in Rivers State, Nigeria

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Abstract

Adequate knowledge and favourable attitudes are important for informed use of emergency contraceptives, but awareness does not necessarily translate into adequate knowledge or positive attitudes. Although previous studies have examined emergency contraceptive knowledge and use among Nigerian undergraduates, evidence addressing both knowledge and attitudes among female students across public universities in Rivers State remains limited. Local evidence is needed to identify students' information needs and guide university-based reproductive health education. This study assessed knowledge and attitudes towards emergency contraceptives among female undergraduate students in public universities in Rivers State, Nigeria. A cross-sectional study was conducted among female undergraduate students at the University of Port Harcourt, Rivers State University, and Ignatius Ajuru University of Education. Data was collected using a structured, self-administered electronic questionnaire through KoboToolbox. Descriptive statistics was used to summarize respondents' characteristics, knowledge, and attitudes, while Pearson's chi-square test was used to assess associations between selected background characteristics and knowledge and attitude levels. Among the total participants, 42.66% of respondents demonstrated good knowledge, while 57.34% had poor knowledge. Attitudes were predominantly negative, with 31.47% demonstrating a positive attitude and 68.53% demonstrating a negative attitude. Knowledge was significantly associated with age, marital status, university attended, and father's occupation. Attitude was significantly associated with age, marital status, and father's occupation. The findings indicate substantial gaps in knowledge and predominantly negative attitudes towards emergency contraceptives despite relatively high awareness. Comprehensive reproductive health education addressing knowledge gaps and misconceptions should be strengthened within university settings.

1. Introduction

Emergency contraceptives provide an important option for preventing unintended pregnancy following unprotected sexual intercourse, contraceptive failure, or incorrect contraceptive use. Available methods include emergency contraceptive pills and the copper-bearing

intrauterine device. However, the usefulness of these methods depends partly on whether individuals understand when they are indicated, how they work, and where they can be obtained [1]. Inadequate information and misconceptions may prevent individuals from making informed decisions about their reproductive health.

Female undergraduate students are an important population for examining knowledge and attitudes towards emergency contraceptives because they may encounter reproductive health decisions while navigating academic, social, and personal responsibilities. Research among female university students in Nigeria has documented gaps in knowledge and misconceptions about emergency contraceptives. Abiodun [2] examined factors associated with emergency contraceptive use among sexually active female university students, while Ajayi [3] explored the use of non-emergency contraceptive pills and unproven remedies as emergency contraceptives among Nigerian university students. These studies demonstrate the importance of examining not only awareness but also the accuracy of students' understanding of available methods.

Evidence from other African countries similarly indicates that knowledge and attitudes towards emergency contraceptives vary across student populations. A systematic review and meta-analysis by Yimer et al. [4] identified limitations in knowledge, attitudes, and practice among female university students in Ethiopia. Fikre et al. [5] also examined factors associated with emergency contraceptive practice among female university students in Ethiopia. More recently, studies have investigated knowledge and use among female college students in Ghana [6–8]. These findings support the need to examine emergency contraceptive knowledge within specific populations rather than assuming that awareness translates into adequate understanding.

Attitudes towards emergency contraceptives are also important because perceptions and misconceptions may influence their acceptability. Students may have concerns about their safety, effects on future fertility, or relationship with abortion. Such beliefs require accurate, evidence-based information. WHO [1] clarifies that emergency contraceptive pills prevent or delay ovulation and do not interrupt an established pregnancy. Recent studies among university students in Nigeria, Ghana, and Sierra Leone have continued to examine emergency contraceptive knowledge, perceptions, and use, indicating the ongoing relevance of this subject in African university settings [9–11].

Although previous studies have examined emergency contraceptive knowledge and use among university students in Nigeria and other African countries, evidence specifically addressing both knowledge and attitudes among female undergraduates across public universities in Rivers State remains limited in the literature reviewed for this study. Differences in study populations and institutional settings also make it important to generate context-specific evidence. This study therefore assessed the level of knowledge and attitudes towards emergency contraceptives among female undergraduate students in three public universities in Rivers State, Nigeria: the University of Port Harcourt, Rivers State University, and Ignatius Ajuru University of Education. The findings are intended to inform student-centred reproductive health education and improve understanding of the information needs of female undergraduates in these institutions.

2. Methodology

2.1. Study Setting

A cross-sectional study design was employed to assess knowledge and attitudes towards emergency contraceptives among female undergraduate students in public universities in Rivers State, Nigeria. Data were collected at a single point in time to describe respondents' knowledge and attitudes and examine their associations with selected sociodemographic characteristics. The study was conducted at the University of Port Harcourt (UNIPORT), Rivers State University (RSU), and Ignatius Ajuru University of Education (IAUE), three public universities in Rivers State, Nigeria.

2.2. Study Population and Sampling Procedure

The study population comprised full-time female undergraduate students enrolled in the three selected universities. Female undergraduate students who consented to participate were eligible for inclusion. Postgraduate students and undergraduate students enrolled in health- or medical-related courses were excluded.

The minimum sample size was calculated using Cochran's formula for estimating a population proportion [12]:

$$n = \frac{Z^2 p(1-p)}{e^2}$$

Where n is the minimum required sample size, Z is the standard normal deviate at a 95% confidence level (1.96), p is the Assumed population proportion (0.50) and e is the margin of error (0.05).

Substituting these values:

$$n = \frac{(1.96)^2 (0.50)(1-0.50)}{(0.05)^2} \approx 384.16$$

The minimum sample size was approximately 385 participants. After adjustment for a 10% non-response rate, the target sample size was approximately 428. A total of 429 female undergraduate students completed the questionnaire and were included in the analysis.

2.3. Data Collection

Data were collected electronically through KoboToolbox. Participants completed the questionnaire independently. No names or other direct personal identifiers were requested, helping to protect respondents' privacy and confidentiality.

A simple random sampling technique was used to select eligible female undergraduate students. The sampling process involved selecting faculties and departments within the three universities, followed by the selection of eligible students from the sampled departments.

Data were collected using a structured, self-administered electronic questionnaire administered through KoboToolbox. The questionnaire was adapted from previous studies by Ahmed et al. [13] and Demissie et al. [14], with modifications to suit the objectives of the present study. The questionnaire comprised five sections covering sociodemographic characteristics, sexual and reproductive history, knowledge

of emergency contraceptives, attitudes towards emergency contraceptive use, and the prevalence and pattern of emergency contraceptive utilization. This article focused on the sections assessing respondents' knowledge and attitudes. Knowledge items assessed awareness and understanding of emergency contraceptives, while attitude items assessed respondents' views and perceptions regarding their use. Attitude items used a five-point Likert response format ranging from strongly disagree to strongly agree.

The questionnaire was developed following a review of relevant literature to ensure that its items addressed the study objectives. The instrument was reviewed by the research supervisor for clarity and relevance and was pilot-tested among respondents with characteristics similar to those of the study population to assess the comprehensibility of the questions.

The reliability of the research instrument was assessed using Cronbach's alpha to determine the internal consistency of the relevant questionnaire items. The analysis yielded a Cronbach's alpha coefficient of 0.70, indicating an acceptable level of internal consistency.

2.4. Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS). Frequencies and percentages were used to summarize respondents' sociodemographic characteristics, knowledge of emergency contraceptives, and attitudes towards their use. Pearson's chi-square test was used to examine associations between selected sociodemographic characteristics and knowledge and attitudes. Statistical significance was set at $p < .05$.

3. Results

Table 1 showed that 42.66% had good knowledge (95% CI: 38.04–47.40), while 57.34% had poor knowledge. Good knowledge was more common among respondents aged 25 years and above (61.04%) than among those younger than 19 years (23.08%). It was also highest among respondents whose fathers were business owners/self-employed (51.20%) and lowest when fathers were unemployed (30.56%).

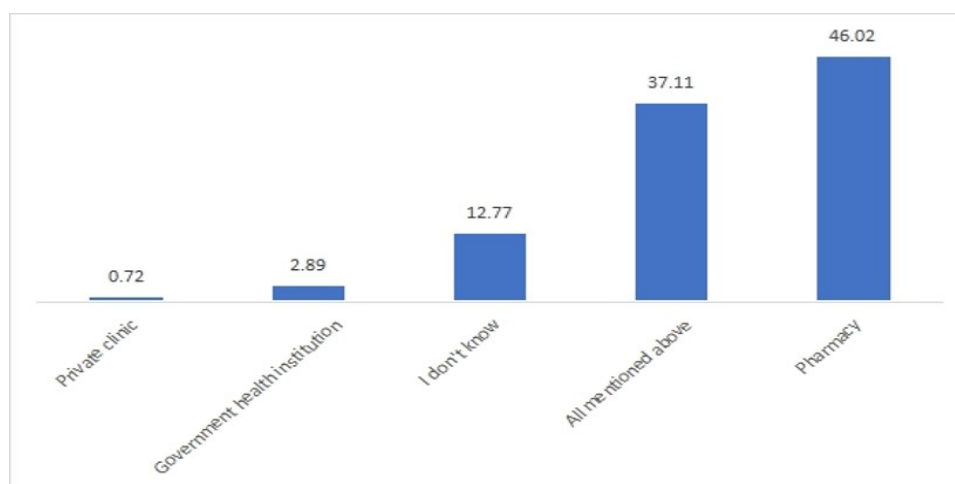


Figure 1: Distribution of where Emergency Contraceptives were obtained

Figure 1 showed pharmacies were the most commonly reported source for obtaining emergency contraceptives (46.02%). However, 37.11% did not know where to obtain them. Government health institutions were reported by 12.77%, while private clinics (0.72%) and the response 'all mentioned above' (2.89%) were less frequently selected.

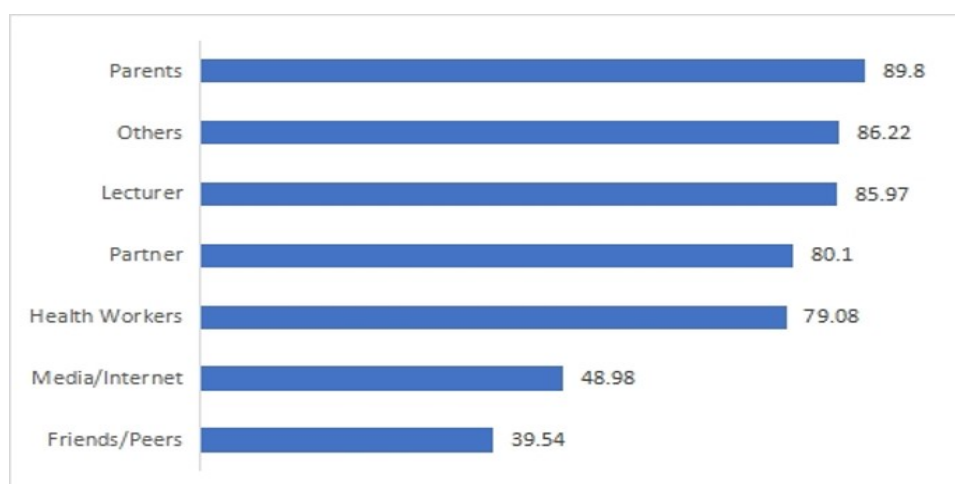


Figure 2: Source of Emergency Contraceptives Information

Table 1: Knowledge Level of Emergency Contraceptives among respondents

Characteristic	Poor Knowledge n (%)	Good Knowledge n (%)	95% CI for Good Knowledge
Overall, Knowledge	246 (57.34)	183 (42.66)	38.04–47.40
Age (years)			
Less than 19	50 (76.92)	15 (23.08)	14.40–34.86
19–21	89 (60.14)	59 (39.86)	32.28–47.97
22–24	76 (55.07)	62 (44.93)	36.82–53.31
25 years and above	30 (38.96)	47 (61.04)	49.74–71.26
Level of Study			
100 Level	45 (63.38)	26 (36.62)	26.26–48.39
200 Level	65 (59.09)	45 (40.91)	32.11–50.34
300 Level	27 (48.21)	29 (51.79)	38.84–64.50
400 Level	97 (59.15)	67 (40.85)	33.58–48.56
500 Level and above	12 (42.86)	16 (57.14)	38.63–73.85
Religion			
Orthodox Christianity	85 (65.38)	45 (34.62)	26.93–43.20
Pentecostal Christianity	137 (52.90)	122 (47.10)	41.08–53.21
Islam	7 (70.00)	3 (30.00)	9.94–62.46
Others	17 (56.67)	13 (43.33)	27.04–61.20
Marital Status			
Married	6 (30.00)	14 (70.00)	47.21–85.89
Single	239 (58.58)	169 (41.42)	36.72–46.28
Place of Residence			
Off-campus	179 (54.74)	148 (45.26)	39.93–50.70
On-campus	67 (65.69)	35 (34.31)	25.74–44.04
Monthly Allowance/Income			
Less than ₦70,000	161 (56.89)	122 (43.11)	37.44–48.96
₦70,000–₦100,000	59 (60.82)	38 (39.18)	29.97–49.22
Above ₦100,000	12 (42.86)	16 (57.14)	38.63–73.85
Mother's Level of Education			
≤ Primary	21 (55.26)	17 (44.74)	29.89–60.59
Secondary	79 (59.85)	53 (40.15)	32.12–48.75
Tertiary	146 (56.37)	113 (43.63)	37.70–49.75
Mother's Occupation			
Business/Entrepreneur/Self-employed	128 (55.17)	104 (44.83)	38.53–51.30
Civil servant/Corporate employee	77 (54.61)	64 (45.39)	37.35–53.68
Farmer/Artisan/Menial work	22 (73.33)	8 (26.67)	13.91–45.01
Others	18 (75.00)	6 (25.00)	11.66–45.71
Father's Level of Education			
≤ Primary	25 (60.98)	16 (39.02)	25.43–54.56
Secondary	60 (55.05)	49 (44.95)	35.87–54.39
Tertiary	161 (57.71)	118 (42.29)	36.61–48.19
Father's Occupation			
Business/Entrepreneur/Self-employed	81 (48.80)	85 (51.20)	43.61–58.74
Civil servant/Corporate employee	125 (61.27)	79 (38.73)	32.27–45.60
Farmer/Artisan/Menial work	15 (65.22)	8 (34.78)	18.41–55.77
Unemployed	25 (69.44)	11 (30.56)	17.77–47.26

Note: 95% CI = 95% confidence interval.

In Figure 2, parents were the most frequently reported information source (89.80%), followed by other sources (86.22%), lecturers (85.97%), partners (80.10%), and health workers (79.08%). Media/internet (48.98%) and friends/peers (39.54%) were reported less often.

In Figure 3, good knowledge was highest at Ignatius Ajuru University of Education (53.00%), followed by the University of Port Harcourt (44.70%) and Rivers State University (36.04%). Rivers State University had the highest proportion with poor knowledge (63.96%).

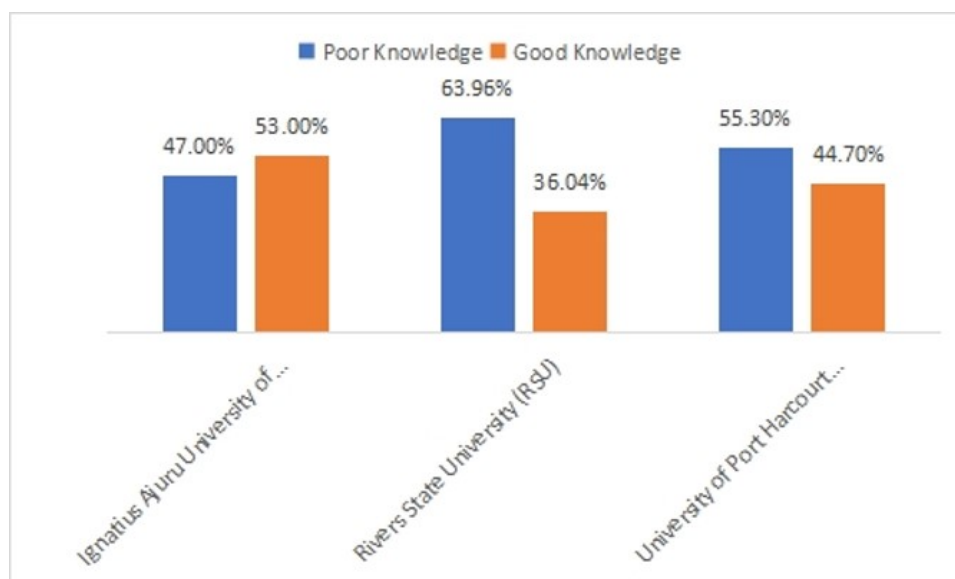


Figure 3: Distribution of Knowledge Level of Emergency Contraceptives by University

In Table 2, Knowledge was significantly associated with age ($p < 0.001$), marital status ($p = 0.012$), university attended ($p = 0.017$), and father's occupation ($p = 0.029$). Associations with level of study, religion, residence, monthly allowance, mother's education and occupation, and father's education were not statistically significant.

Table 3 showed that 31.47% had a positive attitude (95% CI: 27.24–36.03), while 68.53% had a negative attitude. Positive attitudes were more common among respondents aged 25 years and above (38.96%) than among those younger than 19 years (18.46%). Married respondents also had a higher proportion of positive attitudes (55.00%) than single respondents (30.39%).

In Figure 4, Positive attitudes were most common among respondents at the University of Port Harcourt (34.85%), followed by Ignatius Ajuru University of Education (33.00%) and Rivers State University (28.43%). Negative attitudes predominated at all three institutions.

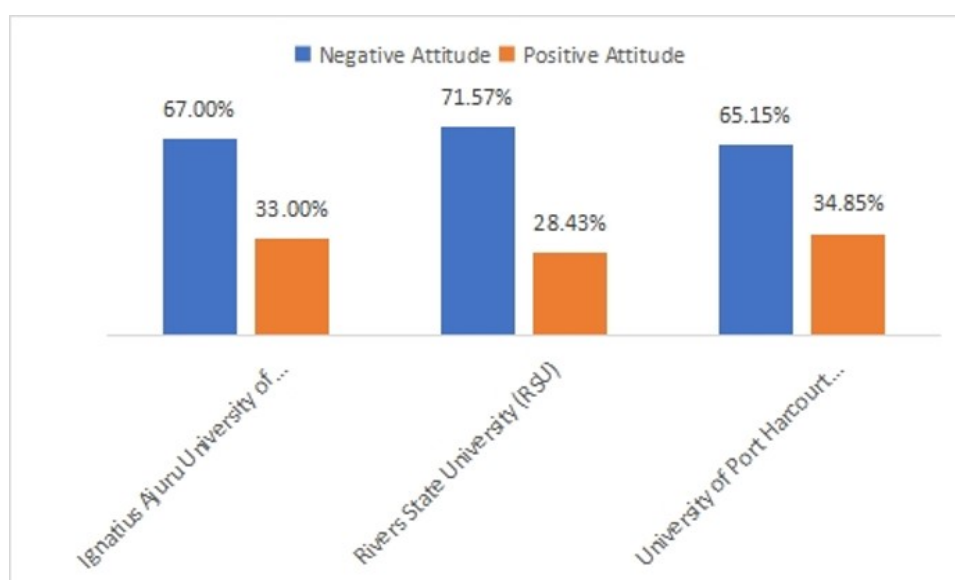


Figure 4: Distribution of Attitude Levels towards Emergency Contraceptives by University

Table 2: Association between Background Characteristics and Knowledge Level of Emergency Contraceptives among Female Undergraduate Students

Background Characteristics	Poor Knowledge n (%)	Good Knowledge n (%)	Total (n)	χ^2	p-value
Age (years)				21.57	<0.001
Less than 19	50 (76.92)	15 (23.08)	65		
19–21	89 (60.14)	59 (39.86)	148		
22–24	76 (55.07)	62 (44.93)	138		
25 years and above	30 (38.96)	47 (61.04)	77		
Level of Study				5.72	0.221
100 Level	45 (63.38)	26 (36.62)	71		
200 Level	65 (59.09)	45 (40.91)	110		
300 Level	27 (48.21)	29 (51.79)	56		
400 Level	97 (59.15)	67 (40.85)	164		
500 Level and above	12 (42.86)	16 (57.14)	28		
Religion				6.19	0.103
Orthodox Christianity	85 (65.38)	45 (34.62)	130		
Pentecostal Christianity	137 (52.90)	122 (47.10)	259		
Islam	7 (70.00)	3 (30.00)	10		
Others	17 (56.67)	13 (43.33)	30		
Marital Status				6.36	0.012
Married	6 (30.00)	14 (70.00)	20		
Single	239 (58.58)	169 (41.42)	408		
Place of Residence				3.81	0.051
Off-campus	179 (54.74)	148 (45.26)	327		
On-campus	67 (65.69)	35 (34.31)	102		
Monthly Allowance/Income				2.86	0.239
Above ₦100,000	12 (42.86)	16 (57.14)	28		
Less than ₦70,000	161 (56.89)	122 (43.11)	283		
₦70,000–₦100,000	59 (60.82)	38 (39.18)	97		
University				8.12	0.017
Ignatius Ajuru University of Education	47 (47.00)	53 (53.00)	100		
Rivers State University	126 (63.96)	71 (36.04)	197		
University of Port Harcourt	73 (55.30)	59 (44.70)	132		
Mother's Level of Education				0.51	0.776
≤ Primary	21 (55.26)	17 (44.74)	38		
Secondary	79 (59.85)	53 (40.15)	132		
Tertiary	146 (56.37)	113 (43.63)	259		
Mother's Occupation				7.07	0.070
Business/Entrepreneur/Self-employed	128 (55.17)	104 (44.83)	232		
Civil servant/Corporate employee	77 (54.61)	64 (45.39)	141		
Farmer/Artisan/Menial work	22 (73.33)	8 (26.67)	30		
Others	18 (75.00)	6 (25.00)	24		
Father's Level of Education				0.47	0.790
≤ Primary	25 (60.98)	16 (39.02)	41		
Secondary	60 (55.05)	49 (44.95)	109		
Tertiary	161 (57.71)	118 (42.29)	279		
Father's Occupation				8.99	0.029
Business/Entrepreneur/Self-employed	81 (48.80)	85 (51.20)	166		
Civil servant/Corporate employee	125 (61.27)	79 (38.73)	204		
Farmer/Artisan/Menial work	15 (65.22)	8 (34.78)	23		
Unemployed	25 (69.44)	11 (30.56)	36		

Note: χ^2 = Pearson's chi-square statistic; p < 0.05 was considered statistically significant.

Table 3: Attitude Level towards Emergency Contraceptives Use among Female Undergraduate Students

Characteristic	Negative Attitude n (%)	Positive Attitude n (%)	95% CI for Positive Attitude
Overall Attitude (N = 429)	294 (68.53)	135 (31.47)	27.24–36.03
Age (years)			
Less than 19	53 (81.54)	12 (18.46)	10.78–29.80
19–21	103 (69.59)	45 (30.41)	23.52–38.30
22–24	90 (65.22)	48 (34.78)	27.29–43.11
25 years and above	47 (61.04)	30 (38.96)	28.74–50.26
Level of Study			
100 Level	41 (57.75)	30 (42.25)	31.33–53.99
200 Level	79 (71.82)	31 (28.18)	20.55–37.31
300 Level	36 (64.29)	20 (35.71)	24.31–49.01
400 Level	117 (71.34)	47 (28.66)	22.24–36.06
500 Level and above	21 (75.00)	7 (25.00)	12.39–44.01
Religion			
Orthodox Christianity	90 (69.23)	40 (30.77)	23.43–39.24
Pentecostal Christianity	172 (66.41)	87 (33.59)	28.09–39.58
Islam	8 (80.00)	2 (20.00)	5.02–54.18
Others	24 (80.00)	6 (20.00)	9.25–38.01
Marital Status			
Married	9 (45.00)	11 (55.00)	33.56–74.73
Single	284 (69.61)	124 (30.39)	26.11–35.04
Place of Residence			
Off-campus	225 (68.81)	102 (31.19)	26.39–36.44
On-campus	69 (67.65)	33 (32.35)	23.98–42.03
Monthly Allowance/Income			
Above ₦100,000	16 (57.14)	12 (42.86)	26.15–61.37
Less than ₦70,000	191 (67.49)	92 (32.51)	27.29–38.20
₦70,000–₦100,000	70 (72.16)	27 (27.84)	19.81–37.58
Mother's Level of Education			
≤ Primary	26 (68.42)	12 (31.58)	18.86–47.82
Secondary	101 (76.52)	31 (23.48)	17.01–31.48
Tertiary	167 (64.48)	92 (35.52)	29.91–41.56
Mother's Occupation			
Business/Entrepreneur/Self-employed	158 (68.10)	74 (31.90)	26.20–38.19
Civil servant/Corporate employee	96 (68.09)	45 (31.91)	24.74–40.07
Farmer/Artisan/Menial work	19 (63.33)	11 (36.67)	21.56–54.94
Others	19 (79.17)	5 (20.83)	8.92–41.41
Father's Level of Education			
≤ Primary	28 (68.29)	13 (31.71)	19.36–47.31
Secondary	79 (72.48)	30 (27.52)	19.94–36.66
Tertiary	187 (67.03)	92 (32.97)	27.70–38.72
Father's Occupation			
Business/Entrepreneur/Self-employed	99 (59.64)	67 (40.36)	33.15–48.01
Civil servant/Corporate employee	154 (75.49)	50 (24.51)	19.08–30.90
Farmer/Artisan/Menial work	15 (65.22)	8 (34.78)	18.41–55.77
Unemployed	26 (72.22)	10 (27.78)	15.62–44.42

Note: 95% CI = 95% confidence interval.

In Table 4, Attitude was significantly associated with age ($p = 0.049$), marital status ($p = 0.021$), and father's occupation ($p = 0.012$). No statistically significant associations were found with level of study, religion, residence, monthly allowance, university attended, mother's education or occupation, or father's education.

Table 4: Association between Background Characteristics and Attitude towards Emergency Contraceptives among Female Undergraduate Students

Background Characteristics	Negative Attitude n (%)	Positive Attitude n (%)	Total (n)	χ^2	p-value
Age (years)				7.87	0.049
Less than 19	53 (81.54)	12 (18.46)	65		
19–21	103 (69.59)	45 (30.41)	148		
22–24	90 (65.22)	48 (34.78)	138		
25 years and above	47 (61.04)	30 (38.96)	77		
Level of Study				5.99	0.200
100 Level	41 (57.75)	30 (42.25)	71		
200 Level	79 (71.82)	31 (28.18)	110		
300 Level	36 (64.29)	20 (35.71)	56		
400 Level	117 (71.34)	47 (28.66)	164		
500 Level and above	21 (75.00)	7 (25.00)	28		
Religion				3.01	0.390
Islam	8 (80.00)	2 (20.00)	10		
Orthodox Christianity	90 (69.23)	40 (30.77)	130		
Pentecostal Christianity	172 (66.41)	87 (33.59)	259		
Others	24 (80.00)	6 (20.00)	30		
Marital Status				5.35	0.021
Married	9 (45.00)	11 (55.00)	20		
Single	284 (69.61)	124 (30.39)	408		
Place of Residence				0.05	0.826
Off-campus	225 (68.81)	102 (31.19)	327		
On-campus	69 (67.65)	33 (32.35)	102		
Monthly Allowance/Income				2.32	0.314
Above ₦100,000	16 (57.14)	12 (42.86)	28		
Less than ₦70,000	191 (67.49)	92 (32.51)	283		
₦70,000–₦100,000	70 (72.16)	27 (27.84)	97		
University				1.65	0.437
Ignatius Ajuru University of Education	67 (67.00)	33 (33.00)	100		
Rivers State University	141 (71.57)	56 (28.43)	197		
University of Port Harcourt	86 (65.15)	46 (34.85)	132		
Mother's Level of Education				5.87	0.053
≤ Primary	26 (68.42)	12 (31.58)	38		
Secondary	101 (76.52)	31 (23.48)	132		
Tertiary	167 (64.48)	92 (35.52)	259		
Mother's Occupation				1.66	0.646
Business/Entrepreneur/Self-employed	158 (68.10)	74 (31.90)	232		
Civil servant/Corporate employee	96 (68.09)	45 (31.91)	141		
Farmer/Artisan/Menial work	19 (63.33)	11 (36.67)	30		
Others	19 (79.17)	5 (20.83)	24		
Father's Level of Education				1.08	0.582
≤ Primary	28 (68.29)	13 (31.71)	41		
Secondary	79 (72.48)	30 (27.52)	109		
Tertiary	187 (67.03)	92 (32.97)	279		
Father's Occupation				11.01	0.012
Business/Entrepreneur/Self-employed	99 (59.64)	67 (40.36)	166		
Civil servant/Corporate employee	154 (75.49)	50 (24.51)	204		
Farmer/Artisan/Menial work	15 (65.22)	8 (34.78)	23		
Unemployed	26 (72.22)	10 (27.78)	36		

Note: χ^2 = Pearson's chi-square statistic; $p < 0.05$ was considered statistically significant.

4. Discussion

This study assessed knowledge and attitudes towards emergency contraceptives among female undergraduate students in public universities in Rivers State. Knowledge of emergency contraceptives varied across age groups, with older respondents demonstrating better knowledge than their younger counterparts. This finding is consistent with Mishore et al. [15], who found that age was associated with knowledge of emergency contraceptives among female college students in eastern Ethiopia. Their study reported that students above the age of 20 years were more likely to have good knowledge than younger students. This finding highlights the importance of providing reproductive health

education early in students' university experience, rather than assuming that adequate knowledge will develop as they grow older. Younger students may have had fewer opportunities to obtain accurate information about emergency contraceptives, although the present study did not directly investigate the reasons for the observed age differences.

Pharmacies were the most commonly reported source of emergency contraceptives among the respondents, although some students were uncertain about where to obtain them. This finding is consistent with Gbagbo [10], who investigated over-the-counter procurement of emergency contraceptives among undergraduate students in a Ghanaian public university, highlighting pharmacies as an important access point for students. The finding suggests that although pharmacies may facilitate access to emergency contraceptives, gaps remain in students' practical knowledge of where to obtain them. University health services could help address this gap by providing clear information on available sources and referring students to qualified healthcare providers for accurate advice. The accessibility and familiarity of pharmacies may help explain their prominence as a reported source, although the present study did not directly investigate why respondents selected particular sources.

Parents were the most frequently reported source of information on emergency contraceptives, followed by other sources, lecturers, partners and health workers, while the media, internet and friends or peers were less frequently reported. This finding differs from Ahmed et al. [13], who identified the media as the leading source of information among female undergraduate students in Ethiopia. In contrast, Alhassan et al. [6] reported health workers and friends or colleagues as notable sources of information among female college students in rural Ghana. These differences suggest that the main channels through which students obtain information about emergency contraceptives may vary across settings and populations. Universities should therefore adopt multiple approaches to health education, including student health services, lecturers and reliable digital resources, while recognising the potential influence of parents and partners. Although the prominence of these information sources may reflect differences in accessibility, familiarity or trust, the present study did not investigate the reasons for the reported pattern.

Good knowledge of emergency contraceptives was most common among respondents at Ignatius Ajuru University of Education, followed by the University of Port Harcourt and Rivers State University. Ogunbode et al. [9] also examined knowledge and predictors of emergency contraceptive use among female undergraduates in two Nigerian universities, highlighting the relevance of assessing students' knowledge within university settings. The variation observed across the three universities in Rivers State suggests the need for health education programmes in all institutions, with particular attention to addressing knowledge gaps among students at Rivers State University. Differences in students' characteristics, previous exposure to reproductive health information and campus-level health education activities may help explain the observed pattern, although the present study did not establish these as contributing factors. The findings should therefore be interpreted as descriptive differences in knowledge across the universities rather than evidence that the institution attended determined students' level of knowledge.

Knowledge of emergency contraceptives was significantly associated with age and marital status, with older and married respondents demonstrating better knowledge than their younger and single counterparts. The association between age and knowledge is consistent with Mishore et al. [15], who found that older female college students were more likely to have good knowledge of emergency contraceptives than younger students in Ethiopia. Similarly, Abewa et al. [7] identified marital status as a factor associated with knowledge among female college students in northwest Ethiopia. These findings suggest that knowledge of emergency contraceptives varies across student groups and highlight the need for reproductive health education that reaches both younger and older students, as well as married and single students. Greater exposure to reproductive health information or opportunities to discuss reproductive health with partners and healthcare providers may partly explain these differences; however, the present study did not directly investigate these possibilities. Therefore, the observed associations should not be interpreted as evidence that age or marital status causes differences in knowledge.

Positive attitudes towards emergency contraceptives were more common among older respondents than among their younger counterparts. This finding is consistent with Osborne et al. [16], who found that age was associated with attitudes towards emergency contraceptives among female university students in Sierra Leone. In their study, respondents aged 31 years and above had higher adjusted odds of a positive attitude than those aged 16–20 years, although the oldest age group was relatively small. The similarity between these findings suggests that younger students may benefit from reproductive health education that addresses concerns and misconceptions about emergency contraceptives. Differences in exposure to reproductive health information or personal experiences may partly explain the observed age pattern, although these factors were not directly assessed in the present study. Therefore, the findings highlight the importance of providing accurate, age-appropriate and non-judgemental reproductive health information to students across all age groups.

Positive attitudes towards emergency contraceptives varied descriptively across the three universities, with respondents at the University of Port Harcourt and Ignatius Ajuru University of Education demonstrating relatively more favourable attitudes than those at Rivers State University. However, university attended was not significantly associated with attitude in the present study. Ahmed et al. [13] similarly reported positive attitudes among approximately one-third of female undergraduate students in Ethiopia, although differences in study populations and attitude-assessment methods should be considered when comparing the findings. These findings suggest that attitude-focused reproductive health education should be implemented across all three universities rather than prioritising one institution based solely on the observed differences. Differences in students' exposure to reproductive health information or prevailing social beliefs may partly explain the pattern, but these factors were not directly assessed in the present study.

Attitudes towards emergency contraceptives were significantly associated with age and marital status. Positive attitudes were more common among older respondents than younger respondents. This finding is consistent with Osborne et al. [16], who found that older female university students in Sierra Leone had higher adjusted odds of a positive attitude towards emergency contraceptives than their younger counterparts. However, Ngososei and Choge [17] found no significant association between age and attitudes among female undergraduate students at the University of Kabianga, Kenya. These findings suggest that the relationship between age and attitudes towards emergency contraceptives may vary across study populations and settings. The findings highlight the importance of providing accurate, age-appropriate and non-judgemental reproductive health education to students across all age groups, with particular attention to younger students. Greater exposure to reproductive health information may partly explain the more favourable attitudes observed among older respondents, although this possibility was not directly investigated in the present study.

Marital status was also significantly associated with attitudes towards emergency contraceptives, with married respondents demonstrating more favourable attitudes than single respondents. This finding contrasts with Osborne et al. [16], who reported that married participants had lower adjusted odds of a positive attitude than single participants. Similarly, Ngososei and Choge [17] found no significant association

between marital status and attitudes towards emergency contraceptives among female undergraduates in Kenya. These contrasting findings suggest that the relationship between marital status and attitudes may differ across populations and settings. The finding supports the provision of confidential, accessible and non-judgemental reproductive health education to both married and single students, without assuming that marital status determines an individual's attitude. Differences in reproductive experiences or contraceptive information needs may partly explain the observed pattern; however, these possibilities were not directly examined in the present study. Furthermore, the relatively small number of married respondents warrants caution when interpreting this finding.

The findings suggest that age and marital status were associated with attitudes towards emergency contraceptives among female undergraduate students in public universities in Rivers State. These associations highlight the need for reproductive health education that addresses students' concerns and misconceptions across different age groups and marital categories. Given the cross-sectional design of the study, the findings demonstrate associations rather than causal relationships.

5. Conclusion

This study found that poor knowledge and negative attitudes towards emergency contraceptives were prevalent among female undergraduate students in public universities in Rivers State, Nigeria. Despite relatively high awareness, substantial knowledge gaps remained, particularly regarding the correct timing, dosage and use of emergency contraceptives. Knowledge was significantly associated with age, marital status, university attended and father's occupation, while attitudes were significantly associated with age, marital status and father's occupation. These findings highlight the gap between awareness and adequate knowledge, alongside the unfavourable attitudes observed among the respondents. Strengthening university-based reproductive health education through accurate information, correction of misconceptions and accessible, confidential, non-judgemental counselling is recommended. The findings also highlight the importance of addressing students' information needs across different demographic and family backgrounds. However, the observed associations should be interpreted cautiously because the cross-sectional design does not establish causality.

Article Information

Ethical Approval: Ethical approval was obtained from the Research Ethics Committee of the Faculty of Basic Medical Sciences, Rivers State University (RSU/FBMS/REC/26/517).

Informed Consent: Electronic informed consent was obtained from all participants before they completed the online questionnaire.

Consent for Publication: Not applicable. This manuscript does not contain identifiable individual participant information requiring separate consent for publication.

Data Availability: The dataset generated and analysed during the current study is available from the corresponding author upon reasonable request, subject to applicable ethical and confidentiality requirements.

Clinical Trial Registration: Not applicable. This study was a cross-sectional observational study and did not involve a clinical trial.

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