



A Comparative Study of Sexual and Reproductive Health Knowledge among Adolescents in Rural and Urban Secondary Schools of Ekiti-State, Nigeria

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DOI: <https://dx.doi.org/10.4314/ajhs.v37i3.10>

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Abstract

BACKGROUND

Adolescents without adequate knowledge of sexual reproductive health are predisposed to high-risk sexual behaviours. Knowledge of sexual and reproductive health among adolescents is generally low, especially in rural areas. This study aimed to compare sexual and reproductive health knowledge and likely disparities among adolescents in rural and urban secondary schools.

METHODOLOGY

The study was a comparative cross-sectional design. Pre-tested, semi-structured, adapted questionnaires were administered to 669 students selected through a multistage sampling technique. Univariate, bivariate and multivariate analyses were conducted after entering data using SPSS version 25. Descriptive statistics (percentages, the sample mean, and frequency tables) were computed. Chi-square was used to determine the association between socio-demographic characteristics and knowledge. Multivariate analyses were conducted using binary regression, considering a p-value threshold of < 0.05.

RESULTS

Overall knowledge was 257 (65.2%) and 207 (75.3%) in the urban and rural, respectively. In the urban area 72.5% (n=150) of the females had good knowledge compared to only 57.2% (n=107) of the boys (p=0.006). Sex of participant was associated with knowledge of sexual reproductive health (p < 0.05).

CONCLUSIONS

The knowledge of sexuality, reproductive anatomy, and physiology among adolescents in rural schools was better than in urban schools. Knowledge of female adolescents was better than that of male adolescents, and the differences were statistically significant.

RECOMMENDATIONS

Culturally gender-sensitive educational intervention should be employed by the government, teachers, and parents.

Keywords: Adolescents, Sexual Reproductive Health Knowledge, Knowledge of Reproductive Anatomy and Physiology

[Afr. J. Health Sci. 2024 37 (3)338-347]

Introduction

Reproductive health is concerned with people's ability to have a responsible, satisfying, and safe sex life, the capability to reproduce, and the freedom to decide if, when and how often to do so.¹ Embedded in this set

of concerns is the right to be informed of safe, effective, affordable, and acceptable methods of fertility regulation.¹ Adolescents particularly are involved in high-risk sexual behaviour hence, promoting healthy choices among them can help them to be healthy and grow into

productive adulthood.² Knowledge will help adolescents to increase control over their sexual and reproductive health thereby protecting themselves against high-risk sexual practices like unprotected sex and having multiple sexual partners.³

Sexual and reproductive health (SRH) knowledge encompasses a good understanding, personal skills, and confidence to make sexual life decisions that will prevent risky sexual behaviour.⁴ However, there are significant disparities in access to healthcare, education, and information resources.⁵

Sexual initiation and sexual activity vary widely by region, country, and sex.⁶ In all regions young people are reaching puberty earlier, often engaging in sexual activity at a younger age, and marrying later⁷⁻⁹ and one salient reason is that many young girls do not know how to negotiate the start of sexual life and agree to have sex, sometimes without expressly wanting to do so, for fear of being abandoned. Most of them act under the psychological pressure of peer pressure.¹⁰ The consequences of this early initiation of sexual activity include cervical cancer, breast cancer, early ageing, infertility and infection with human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs).¹¹ More so, every year, an estimated 21 million girls aged 15–19 years in developing regions become pregnant and approximately 12 million of them give birth. At least 777,000 births occur to adolescent girls younger than 15 years in developing countries.¹²

Considering the risks involved, sexual health has been acknowledged as a critical public health issue. Despite these imperatives, key stakeholders maintain a misguided notion that sexuality education will foster liberal attitudes toward sex and sexual immorality. They, therefore, refuse to provide sexual education, especially regarding contraception.^{13,14} Reported sources of information on sexual behaviour include friends and acquaintances (35.2%), mass media and the internet (26.4%); less than one-third of the subjects benefited from sexual education

classes in school, which was higher among urban subjects than their rural counterparts.¹⁴

Sexual and reproductive health is meant to be a continuum from early to late adolescence starting with a basic knowledge of the reproductive organs in early adolescence and then to knowledge of sexual behaviour and then that of predisposing factors, symptoms and complications of sexually transmitted infections and how to prevent unwanted pregnancy in late adolescence.¹⁵ This should take place in schools where structured learning has been established. Parents and health workers in the community can complement the effort of the teachers to reinforce what has been taught.^{3,16}

Socio-cultural barriers make access to information more difficult, especially in rural areas.^{3,17} For meaningful intervention in SRH of adolescents, there is a need to assess the basic school-based knowledge of anatomy and physiology as part of the SRH. There is a dearth of knowledge on this as other studies majorly researched on general knowledge of sexual behaviour or STIs^{18,19,20} and not the basic knowledge of the anatomy and physiology and they were confined to the urban areas. If we are going to achieve SDGs 5 and 10, then it is imperative to study this topic in the rural areas too.

Physiologic function influences adolescents' sexual behaviour.²¹ Assessing the basic school-based knowledge of their physiology will help tailor interventions that will enable them to make the right choice regarding reproductive health and prevent complications that will affect their emotional and physical health in the future.

The adolescent population globally is 1.2 billion, making 16 % of the world's population²² and more than 1 in 4 people in Nigeria are adolescents.¹⁸ Despite being a large part of the population and the obvious risks they face due to a lack of comprehensive sexual education, these needs are still not met.²³ There is a dearth of studies that scrutinize the rural-urban disparities in Sexual and Reproductive Health Education (SRHE). Furthermore, no

recent investigations have been conducted in Ekiti State, Nigeria, on this subject. This study, therefore, sought to compare the knowledge level of SRH between urban and rural secondary schools to recommend interventional measures to curb this public health menace.

Materials and Methods

Study area and design

Ekiti State is one of the six states in the South-west region of Nigeria. The state has 16 Local Government Areas (LGAs) and 141 registered public schools. Our study design was a comparative cross-sectional that compared the sexual and reproductive health knowledge in rural and urban secondary schools in Ekiti State in Nigeria.

Study population and sampling

The study population consisted of adolescents in selected rural and urban secondary schools. Any student in a registered public school between 10–19 years was eligible to participate and those not present were excluded.

The minimum sample size was obtained using the formula for comparing proportions between two groups with p_1 and p_2 being 79.7% and 68.1%, respectively.¹⁹

$$N = \frac{2(Z\alpha + Z\beta)^2 P_o(1-P_o)}{d^2}$$

Where:

$Z\alpha$ = Standard normal deviate corresponding to the probability of Type I error α at 5% level of significance = 1.96

$Z\beta$ = Standard normal deviate corresponding to the probability of making Type II error β at 20%, power at 80% = 0.84

P_o = Average of the prevalences

d = Difference between the prevalences

$$N = \frac{2(1.96+0.84)^2 0.739(1-0.739)}{(0.797-0.681)^2}$$

$$N = 222$$

Correcting for possible 10% non-responses

$$\text{Sample size} = \frac{N}{1-f} = \frac{222}{0.9} = 246$$

The calculated sample size was approximated to 250 per group. The total sample size = 500. However, 669 participants were sampled.

Multi-stage sampling technique was employed to recruit participants for the study. The stages included selection of Local Government Areas (LGAs) -1 rural, 1 urban LGA using simple random sampling by balloting; choosing secondary schools (2 schools/LGA with simple random sampling by balloting) and then selection of students using systematic random sampling.

Data collection

Study data was collected using a self-administered semi-structured questionnaire by trained research assistants (medical students). The questionnaire was adapted and developed by researchers from the literature. Information regarding the respondent's socio-demographic characteristics, school-based knowledge of anatomy and physiology and knowledge of sexual reproductive health was collected.

The questionnaire was pretested among adolescents in schools within a different LGA from the study sites. Following the pre-test validation and necessary revisions were made. Cronbach alpha scale was used in this study to assess internal consistency and the two-week test-retest reliability coefficient was 0.70.

Data analysis

Data was entered, cleaned, and analysed using SPSS version 25. The data obtained were presented using tables. Measures of association between variables (knowledge and sociodemographic characteristics) were done using the t-test for age, chi-square test and binary regression at bivariate and multivariate levels. The p-value was set at 0.05.

Measurement of knowledge

There were ten questions under knowledge of reproductive anatomy and physiology. Examples are: Is the clitoris a female reproductive organ? Is the testis a male reproductive organ? Will a girl get pregnant if she has sexual intercourse while on her period? Does masturbation have serious health implications? For school-based knowledge on

sexuality and reproductive health education, there were eight questions e.g. is sexual education about having good self-esteem? Sexual education involves making the right choices in life, etc. One (1) point was allotted to each correct answer and zero (0) for a wrong answer. The mean score was obtained, and respondents with marks below the calculated mean were categorised as poor knowledge and those with the mean mark and above were classified as good knowledge.

Ethical considerations

Ethical approval to conduct this study was obtained from Ekiti State University Teaching Hospital Ethics and Research Committee with protocol number EKSUTH /A67/2023/05/017. Approval was obtained from the Ministry of Education, and permission sought from the school authorities. Verbal informed consent was sought from each respondents and confidentiality of all collected data ensured. Participation was voluntary and participants were informed of their right to withdraw at any time from the study.

Results

A total of 675 questionnaires were distributed and 669 were returned giving a response rate of 99%. The overall mean age of the students was 14.1 ± 2.17 years. Most of the students ($n=374$, 94.9%) in the urban secondary schools were Christians, while only 18.5% (51) of the students in the rural secondary schools practised Islamic religion ($\chi^2 = 35.359$, $p=0.000$). Table 1.

In the urban schools 52.8%) ($n=208$) of the students couldn't confirm whether the clitoris is part of the female reproductive organ against 39.6% ($n=109$) of the students in the rural schools ($\chi^2 = 11.243$, $p = 0.001$). Among the students in the urban secondary schools, 218 (55.3%) of them couldn't correctly ascertain if masturbation has serious health implications compared to 175 (63.6%) students in the rural schools ($\chi^2 = 4.611$, $p = 0.032$). Table 2.

Generally, the majority of the respondents 464 (69.4%) had a good knowledge of sexuality, reproductive anatomy and physiology. Among the respondents, 257 (65.2%) and 207 (75.3%) from urban and rural, respectively, had good knowledge of sexuality, reproductive anatomy and physiology. Table 3.

Table 1:
Socio-demographic Characteristics of Adolescents in Urban and Rural

Characteristics		Urban N = 394 (%)	Rural N = 275 (%)	Total N = 669 (%)	X ²	P-Value
Gender	Male	187 (47.5)	125 (45.5)	312 (46.6)	0.262	0.609
	Female	207 (52.5)	150 (54.5)	357 (53.4)		
Class	JSS	210 (53.3)	119 (43.3)	329 (49.2)	6.515	0.011*
	SSS	184 (46.7%)	156 (56.7)	340 (50.8)		
Age in years	> 14 years	171 (43.4)	85 (30.9)	256 (38.3)	10.669	0.001*
	≥ 14 years	223 (56.6)	190 (69.1)	407 (61.7)		
	$\Sigma X \pm S.D.$	13.75 ± 2.11	14.6 ± 2.15	14.1 ± 2.17		
Religion	Christianity	374 (94.9)	224 (81.5)	598 (89.4)	35.359	0.000*
	Islam	18 (4.6)	51 (18.5)	69 (10.3)		
	Traditionalist	2 (0.5)	0 (0.0)	2 (0.3)		
Family type	Single parent	72 (18.4)	40 (14.5)	112 (16.9)	4.995	0.172
	Monogamy	297 (75.4)	208 (75.6)	505 (75.5)		
	Polygamy	24 (6.1)	27 (9.8)	51 (7.6)		
	Others	1 (0.3)	0 (0.0)	1 (0.1)		
Live with who?	Both parents	317 (80.5)	235 (85.5)	552 (82.5)	7.099	0.069
	Mother only	33 (8.4)	25 (9.1)	58 (8.7)		
	Father only	10 (2.5)	5 (1.8)	15 (2.2)		
	Guardian	34 (8.6)	10 (3.6)	44 (6.6)		

* Independent sample t-test, p-value 0.05, JSS-Junior Secondary School, SSS- Senior Secondary School

Table 2:
Knowledge of Adolescents on Sexuality, Reproductive Anatomy and Physiology among Rural and Urban

Knowledge	Urban N = (%)	Rural N = (%)	Total N = (%)	X ²	P-Value
Clitoris is female reproductive organ	N = 394	N = 275	N = 669		
Correct	186 (47.2)	166 (60.4)	352 (52.6)	11.243	0.001*
Incorrect	208 (52.8)	109 (39.6)	317 (47.4)		
Uterus and fallopian tube are female reproductive organs	N = 394	N = 275	N = 669		
Correct	254 (64.5)	199 (72.4)	453 (67.7)	4.619	0.032*
Incorrect	140 (35.5)	76 (27.6)	216 (32.3)		
Testis is male reproductive organ	N = 394	N = 275	N = 669		
Correct	291 (73.9)	212 (77.1)	503 (75.2)	0.907	0.341
Incorrect	103 (26.1)	63 (22.9)	166 (24.8)		
A woman can conceive if she has intercourse while on her period	N = 394	N = 275	N = 669		
Correct	295 (74.9)	215 (78.2)	510 (76.2)	0.979	0.323
Incorrect	99 (25.1)	60 (21.8)	159 (23.8)		
Masturbation has health implications?	N = 394	N = 275	N = 669		
Correct	176 (44.7)	100 (36.4)	276 (41.3)	4.611	0.032*
Incorrect	218 (55.3)	175 (63.6)	393 (58.7)		
Have you attained menarche?	N = 202	N = 145	N = 357		
Yes	102 (49.3)	91 (60.7)	193 (54.1)	4.544	0.033*
No	105 (50.7)	59 (39.3)	164 (45.9)		
Age of menarche	N = 102	N = 91	N = 193		
> 13 years	53 (52.0)	22 (24.2)	75 (38.9)	15.627	0.000*
≥ 13 years	49 (48.0)	69 (75.8)	118 (61.1)		
ΣX ± S.D.	12.67 ± 1.29	13.65 ± 1.50	13.13 ± 1.475	-4.882 ^t	0.000*
Have you started ejaculating?	N = 187	N = 125	N = 312		
Yes	59 (31.6)	58 (46.4)	117 (37.5)	18.030	0.000*
No	86 (46.0)	60 (48.0)	146 (46.8)		
I don't know	42 (22.5)	7 (5.6)	49 (15.7)		
Classes on sexual and reproductive systems?	N = 327	N = 204	N = 531		
Yes	190 (58.1)	104 (51.0)	294 (55.4)	2.580	0.108
No	137 (41.9)	100 (49.0)	237 (44.6)		
Sexual education is about puberty?	N = 190	N = 104	N = 294		
Correct	151 (79.5)	82 (78.8)	233 (79.3)	0.016	0.899
Incorrect	39 (20.5)	22 (21.2)	61 (20.7)		
Sexual education is about having self-esteem?	N = 190	N = 104	N = 294		
Correct	128 (67.4)	75 (72.1)	203 (69.0)	0.709	0.400
Incorrect	62 (32.6)	29 (27.9)	91 (31.0)		
Sexual education involves making the right choices?	N = 190	N = 104	N = 294		
Correct	139 (73.2)	72 (69.2)	211 (71.8)	0.512	0.474
Incorrect	51 (26.8)	32 (30.8)	83 (28.2)		

^t: Independent sample t-test, p-value 0.05

Table 3:
Overall Knowledge of Sexuality, Reproductive Anatomy and Physiology of Adolescents in Urban and Rural

Variable	Urban N = (%)	Rural N = (%)	Total N = 361 (%)	X ²	P-Value
	N = 394	N = 275	N = 669		
Good Knowledge	257 (65.2)	207 (75.3)	464 (69.4)	7.688	0.006*
Poor Knowledge	137 (34.8)	68 (24.7)	205 (30.6)		

Table 4:
Relationships between Sociodemographic Characteristics and Knowledge of Sexuality, Reproductive Anatomy & Physiology between Rural and Urban

		Urban		Rural	
	Variables	Good Knowledge N = 257 (%)	Poor Knowledge N = 137 (%)	Good Knowledge N = 207 (%)	Poor Knowledge N = 68 (%)
Gender	Male	107 (57.2)	80 (58.4)	99 (79.2)	26 (20.8)
	Female	150 (72.5)	57 (27.5)	108 (72.0)	42 (28.0)
	χ^2	10.067		1.899	
	p	0.002*		0.168	
Class	JSS	126 (60.0)	84 (40.0)	78 (65.5)	41 (34.5)
	SSS	131 (71.2)	53 (28.8)	129 (82.7)	27 (17.3)
	χ^2	5.420		10.662	
	p	0.020*		0.001*	
Age in years	> 14 years	106 (62.0)	65 (38.0)	57 (67.1)	28 (32.9)
	≥ 14 years	151 (67.7)	72 (32.3)	150 (78.9)	40 (21.1)
	χ^2	1.398		4.459	
	p	0.237		0.035*	
Religion	Christianity	247 (66.0)	127 (34.0)	171 (76.3)	53 (23.7)
	Islam	9 (50.0)	9 (50.0)	36 (70.6)	15 (29.4)
	Traditionalist	1 (50.0)	1 (50.0)	-	-
	χ^2	2.154		0.738	
	p	0.341		0.390	
Family type	Single parent	38 (52.8)	34 (47.2)	30 (75.0)	10 (25.0)
	Monogamy	201 (67.7)	96 (32.3)	159 (76.4)	49 (23.6)
	Polygamy	18 (75.0)	6 (25.0)	18 (66.7)	9 (33.3)
	Others	0 (0.0)	1 (100.0)	-	-
	χ^2	8.592		1.229	
	p	0.035*		0.541	
Live with who?	Both parents	207 (65.3)	110 (34.7)	179 (76.2)	56 (23.8)
	Mother only	19 (57.6)	14 (42.4)	16 (64.0)	9 (36.0)
	Father only	7 (70.0)	3 (30.0)	2 (40.0)	3 (60.0)
	Guardian	24 (70.6)	10 (29.4)	10 (100.0)	0 (0.0)
	χ^2	1.384		8.436	
	p	0.709		0.038*	

*p value 0.05

Table 5:
Predictors of Sexual Reproductive Health Knowledge among Adolescents in Rural and Urban Secondary Schools in Ekiti State

		Urban			Rural		
		OR	95% CI	p-value	OR	95% CI	p-value
Sex	Male	1			1		
	Female	1.517	0.758 - 3.034	0.239	2.099	0.851 - 5.178	0.107
Age	<14 years	1			1		
	≥14 years	0.759	0.288 - 2.001	0.577	0.657	0.157 - 3.178	0.657
Class	JSS	1			1		
	SSS	1.428	0.556 - 3.670	0.459	0.503	0.389 - 6.848	0.503
Family Type	Monogamy	1			1		
	Others	2.526	0.788 - 8.101	0.119	0.448	0.391 - 8.367	0.448
Living with who?	Both Parent	1			1		
	Others	1.293	0.878 - 1.903	0.193	0.635	0.718 - 1.721	0.635

*Family type (single parent & polygamy were grouped with others), Living with who? (with father, mother and guardian were grouped as others)

There is a correlation between gender and knowledge of reproductive anatomy and physiology as revealed in Table 4. Female adolescents in urban secondary schools with good knowledge (n=150, 72.5%) were more compared to the 57.2% (n=107) that had good knowledge among the males ($p < 0.005$).

The factors that were significant either in urban or rural were included in the regression model. The females in both urban and rural were more likely to be knowledgeable in sexual and reproductive health, though this is not significant, as shown in Table 5.

Discussion

There are disparities between rural and urban communities, thereby increasing inequities. Adolescent Sexual and Reproductive Health (ASRH) especially in the sub-Saharan African countries has been marked with inequity and much more distinction between the rural and the urban. This discrimination is a major public health concern and to monitor this, having good data available is imperative, hence this study focuses on comparing adolescent sexual and reproductive health knowledge between rural and urban secondary school adolescents.

There is an age difference between the rural and the urban respondents in this present study, the urban schools have younger adolescents per class. This may be because of early exposure to academic experiences in urban settings. This is like the finding in Adetokunbo's work which reported early attainment in education among urban dwellers in Ekiti State, Nigeria.²⁴

Similarly, Tikoko and Omondi also reported the same about Nakuru County, Kenya. Both groups also exhibited significant differences in religious composition. The differences, especially the dominance of Christianity in urban schools over the rural ones, agree with other studies within and outside the country.^{20,25} More connectedly, it has been shown that religious background can shape adolescents' perspectives on sexuality and reproductive health.²⁶ Hence, there is a

need for religious-sensitive educational intervention among the adolescents.

The level of adolescents' sexual reproductive health knowledge in this study is above average. About two third of them had good knowledge. The general knowledge level is more than what was reported by Gaferi in Saudi Arabia.²⁷ Three-quarters of the adolescents in the rural had good knowledge of reproductive anatomy and physiology while about two third of the urban adolescents had good knowledge. This is contrary to the common finding as many others reported knowledge in the urban settings is higher.^{28, 29} Though it was documented that the urban poor also have poor indicators compared to their counterpart in the rural.²⁹ This is a possibility here since the research was conducted in public schools which are attended by the low and a few of the middle socioeconomic-class children. The high socioeconomic class and most of the middle class sent their children to private schools. To remove this gap, there is a need for comprehensive education for both rural and urban students, fostering healthy relationships while dispelling prevalent misconceptions.

When comparing the knowledge of the anatomical structure and function of the reproductive organ between the rural and the urban in variables like 'Is clitoris and uterus parts of the female reproductive organ?', 'is the testis part of the male reproductive organ?', 'does masturbation have health complications?' etc, the proportion of urban adolescents with correct knowledge was fewer. This discrepancy may be attributed to diverse and potentially contradictory information sources prevalent in the urban, thereby fostering misinformation.

The study identified that there is gender disparity in reproductive health knowledge, with female respondents consistently demonstrating higher knowledge compared to their male counterparts. Other previous work done supported this.^{30,31} This finding may suggest that there are gender differences in sexual and reproductive health knowledge and

information access. Several reasons could account for this difference, such as cultural expectations regarding open conversations with adults, and the influence of gendered socialization among females on attitudes towards sexuality and relationships. This highlights the need for educational programs that actively engage boys and young men in discussions about SRH, aiming to dismantle harmful gender stereotypes and promote a more inclusive and balanced understanding of reproductive health among all adolescents, irrespective of gender. The multivariate analysis also revealed that the females were more likely knowledgeable, though this was not significant. More exploratory research needs to be conducted to determine other factors responsible for this disparity.

At age less than 13 years, 1 in 2 of the urban girls in this study had already reached menarche compared with 1 in 4 of their counterparts in the rural.³² Early menarche, as evidenced by the literature, constitutes various reproductive issues and is causally linked to premature sexual debut, early engagement in transactional sexual activities, and contraction of sexually transmitted diseases. Early menarche will also lead to unwanted pregnancy, early marriage and lower educational attainment for the girls.^{33, 34, 35} These are part of the inequalities for girls rooted in social, cultural and economic spheres that influence the prospects, decision-making power and autonomy of the female gender.³⁶ Thus, it is imperative to accord due attention to this phenomenon to forestall deleterious eventualities. Furthermore, these observations necessitate the need for comprehensive sexual education in both rural and urban schools.

Limitations

Firstly, the cross-sectional design adopted precludes conclusions about causal relationships. Secondly, relying solely on self-reported data might introduce response bias.

Conclusion

There is a disparity in knowledge of sexuality, reproductive anatomy and

physiology between the rural and the urban with rural adolescents having higher knowledge. Generally, the knowledge of the female adolescents was higher in both rural and urban secondary schools. It was also observed that knowledge level was higher among the older adolescents.

Recommendations

Policymakers and educators (education administrators and teachers) collaborate to formulate curriculum guidelines encompassing all dimensions of reproductive health that are culturally and religiously sensitive, and age-appropriate.

Acknowledgement

The authors would like to thank the medical students who collected the data and the school authorities for their cooperation.

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Conflict of Interest: None declared

Source of financial support: Self-funded by authors

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