

Predictors of sexual and reproductive behaviors among adolescents in a secondary school for girls in Enugu Metropolis, Nigeria



Original article

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Abstract: Objectives: The adolescent period is characterized by increased sexual curiosity and interest in the opposite sex, including opposite-sex relationships. Hence, adolescents are more likely to experience sexual and reproductive health (SRH) issues. This study assessed the sexual and reproductive behavior of adolescents, along with its associated factors, at a secondary school in Enugu metropolis.

Methods: A cross-sectional descriptive survey was employed involving 324 female students at Queens School, Enugu, Nigeria, using the simple random sampling technique. The instrument for data collection was a researcher-developed questionnaire with a reliability coefficient of 0.762.

Results: The mean age and standard deviation (SD) of the respondents was 13.55 ± 1.69 . Only 28 (8.6%) of the adolescents were sexually active. Half ($n = 14$, 50%) of the sexually active adolescents had had their first sexual experience before 9 years of age. Class ($P = 0.003$), living characteristics ($P = 0.019$), and receiving of pocket money ($P = 0.002$) were significantly associated with SRH behavior. Respondents who received pocket money significantly predicted risky sexual and reproductive behavior [OR = 2.714, $P < 0.05$, 95%CI (1.002–7.353)].

Conclusions: Although proportionately low, risky SRH behavior is prevalent among the respondents. Healthcare providers should collaborate with other stakeholders to provide more information and resources that can be channeled to improve adolescent SRH behavior.

Keywords: adolescents • behavior • sexual and reproductive health • enugu • predictors

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1. Introduction

The sexual and reproductive health (SRH) needs of adolescents in many African countries are often under-served and underestimated,¹ even though adolescents make up a major segment of the population.

They account for 16% of the global population, which has increased to 1.3 billion individuals.² Distinguished by a sequence of physiologic, psychological, physical, and social changes, adolescents are exposed

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to various experiences and behaviors that might be hazardous to their health, such as early experimentation with sex, the practice of unsafe sex, and having many sexual partners.³ They are thus far more likely to experience SRH issues such as early marriage, teenage pregnancies, unsafe abortion, sexually transmitted infections (STIs), Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS), and other life-threatening conditions.⁴

Alarming, these SRH issues are becoming more prevalent among adolescents in sub-Saharan Africa,⁵ of which Nigeria is a part. According to the World Health Organization (WHO),⁶ 250 out of every 1000 adolescent pregnancies result in unsafe abortion. There is a high incidence of STIs, HIV/AIDS, and unintended pregnancy among adolescents in sub-Saharan Africa.⁶ This has been linked to risky sexual behavior and has remained a major public health issue.⁷ Age at sexual debut is a significant predictor of adolescent outcomes in terms of SRH and is linked to poor condom use.⁸ Additionally, adolescents who experience sexual activity at an early age have a higher risk of becoming pregnant and contracting an STI than those who delay sexual initiation.⁸

Yaya and Bishwajit⁹ report that in Nigeria, multiple sexual partners are significantly predicted by early sexual debut, and women who had their first sexual experience before the age of 18 years were found to have between 2 and 3 or more lifetime sexual partners. Evidence has shown that the majority of sexually active Nigerian adolescents often wait an average of about a year following their first sexual experience before using any form of contraceptive.⁹ These risky behaviors increase the risk of negative SRH outcomes.⁸ Hence, there is a need to give adolescent SRH the attention it deserves, particularly in developing countries like Nigeria, where adolescent SRH needs and issues are yet to receive adequate attention. This is despite the recognition of youth-friendly reproductive health services as a strategy to increase their access to and usage for the achievement of quality SRH.¹⁰

Concerning teenage motherhood, globally, approximately 16 million females between the ages of 15 years and 19 years and about 1 million girls under the age of 15 years, give birth each year, with an estimated 75 million of the 180–200 million pregnancies being unintended.¹⁰ Adolescent girls in Africa between the ages of 15 years and 19 years are responsible for 25% of all unsafe abortions, while girls between the age of 15 years and 24 years account for 57% of all unsafe abortions in sub-Saharan Africa.¹¹ Although the abortion legislation and policy in Nigeria forbids access to legal abortion services, around 60% of the 600,000 induced abortions that occur each year are carried out on adolescents.¹¹ The majority of these induced abortions are

carried out in unhygienic settings by untrained health-care providers,¹² and without the required post-abortion care, many of them have disastrous consequences.

The majority of the estimated 333 million new instances of treatable STIs happen in developing nations, with the second-highest prevalence happening in those between the ages of 15 years and 19 years.¹¹ Currently, 780,000 adolescent males and 1.3 million adolescent girls are living with HIV worldwide, and sub-Saharan Africa accounts for 79% of all new adolescent HIV infections.¹³ Nigeria has been categorized as a high-burden country for adolescent SRH problems;¹⁴ 1 in 20 adolescents develop STIs each year, and half of all HIV infections occur in adults under the age of 25 years.¹⁵ This could be a result of early sexual activity among adolescents, which makes them more susceptible to HIV, unintended pregnancies, and unsafe abortions.¹⁵ Unfortunately, adolescents who wish to prevent pregnancy may be unable to do so due to poor knowledge, lack of access, and inconsistent and/or incorrect use of contraceptives.³

Nearly a quarter of adolescent females in Nigeria, as of 2018, have started having children, putting them at a higher risk of maternal problems than older age groups.¹⁶ Unsafe abortions contribute greatly to the high maternal mortality burden in Nigeria, accounting for 512 maternal deaths per 100,000 live births.¹⁷ These aforementioned SRH issues could be a result of the engagement of risky SRH behaviors among adolescents. Identifying SRH behaviors and factors that are associated with them can provide data that can be instrumental to designing health systems that meet the SRH of adolescents. Therefore this study aimed to assess the SRH behavior among adolescent females in Queens Secondary School in Enugu state.

The specific objectives of the study are to:

1. determine the sexual reproductive behavior of adolescent females in Queens School Enugu;
2. ascertain the factors associated with sexual and reproductive behavior of adolescent females in Queens School Enugu;
3. determine the predictors of risky sexual and reproductive behavior of adolescent females in Queens School Enugu.

2. Methods

2.1. Participants

This study is a cross-sectional descriptive survey conducted among adolescent female students of Queens School, Ogui, New-layout, Enugu State, Nigeria, an all-girls government boarding and day secondary school. A

sample size of 324 participants using Krejcie and Morgan's power analysis method for a known population (2080 students) was used for the study. The participants were recruited through a simple random sampling technique from Junior Secondary (JS) 1 and 2 and Senior Secondary (SS) 1 and 2. There were a total of 83 students from JS 1, 101 from JS 2, 78 from SS 1, and 62 from SS 2.

2.2. Inclusion criteria

- Adolescent students between the ages of 10 years and 19 years.
- Students enrolled in JS 1 and 2, and SS 1 and 2.
- Students who provided evidence of informed consent from both themselves and their parents or guardians.
- Students present at the time of the study.

2.3. Exclusion criteria

- Students less than 10 years and above 19 years of age.
- Students in examination classes (JS 3 and SS 3). They were currently writing their examinations at the time the study was conducted.
- Students who did not provide the required consent from both themselves and their parents or guardians.

2.4. Measurement

A researcher-developed questionnaire with a reliability coefficient of 0.762 was the instrument for data collection. The instrument consisted of 2 sections: Section A assessed the socio-demographic characteristics, family living characteristics and living conditions of the students, while Section B assessed their SRH behaviors.

2.5. Data collection

Ethical approval was obtained from the Health Ethics and Research Committee of the Enugu State Ministry of Health (Ref: MH/MSD/REC21/441). Administrative permit was obtained from the Principal of the school before data collection. Informed consent was sought from the participants before administration distribution of the questionnaire. Two sets of consent forms were given to each student: one for the parent/guardian and one for the student. An explanation about the purpose of the study and the necessary instructions on how to fill out the questionnaire were provided. The principles of voluntary participation, anonymity, and confidentiality were upheld throughout the study. No identifiers were used in the questionnaire, eliminating the possibility of tracking the respondents' responses back to them. Due

to the sensitive nature of the study, participation was entirely voluntary, with no penalties for non-participation and withdrawal at any stage of the study. Access to the collected questionnaire was strictly restricted to the research team alone.

2.6. Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25 and Microsoft Excel (IBM Corporation, Armonk, New York, United States). Descriptive statistics (frequencies, means, and standard deviation [SD]) were used to summarize the data. Each item in Section B of the questionnaire was judged either to be safe or risky behavior. The overall SRH behavior was classified to be risky if there was early initiation of sexual activity, unprotected sex, more than one sexual partner, unsafe abortion practices, and nonuse of contraceptives; and classified safe, if otherwise, or if no sexual activity.

Chi-square and Fisher's Exact tests were used to ascertain the factors significantly associated with SRH behavior. The Fisher Exact test was used when data failed to meet the Chi-square test assumption. These assumptions include 2 categorical variables; 2 or more categories (groups) for each variable; independence of observation (there is no relationship between the subjects in each group and the categorical variables are not paired in any way, for example, pre/post-test observation) and lastly, relatively large sample size (expected frequencies for each cell are at least 1 and expected frequencies should be at least 5 for the majority (80%) of the cells). A *P*-value less than 0.05 (<0.05) indicated a significant association; otherwise, no significance. Logistic regression, in the form of an odds ratio, was used to predict risky sexual and reproductive behaviors among the students.

3. Results

3.1. Socio-demographic characteristics of adolescents at Queens School, Enugu

The results given in Table 1 show that the age of the students ranged from 10 years to 18 years with a mean and SD of 13.55 ± 1.69 . Almost all were Igbos (98.8%, $n = 320$) and Christians (99.1%, $n = 321$). The majority of the respondents were day students (78.4%, $n = 254$).

3.2. Family characteristics and living conditions of the students

Table 2 shows that a greater proportion of the respondents were living with both parents (76.9%, 249), mostly in a nuclear family setting (94.0%, $n = 234$). For those

Items	Frequency	Percent (%)
<i>Age (range 10–18, M ± SD: 13.55 ± 1.69)</i>		
≤12	97	29.9
13–14	132	40.7
≥15	95	29.3
<i>Tribe</i>		
Igbo	320	98.8
Hausa	1	0.3
Yoruba	1	0.3
Others: Ibibio, Delta	2	0.6
<i>Religion</i>		
Christianity	321	99.1
Traditional	1	0.3
Islam	2	0.6
<i>Class</i>		
JSS 1	86	26.5
JSS 2	105	32.4
SSS 1	75	23.1
SSS 2	58	17.9
<i>Student type</i>		
Day student	254	78.4
Boarder	70	21.6

Note: SD, standard deviation.

Table 1. Socio-demographic characteristics of students of Queens Secondary School, Enugu, Nigeria ($n = 324$).

not living with both parents, the majority were living with a female individual (77.3%, $n = 58$). In all, 104 of the respondents were living in a 3-bedroom flat (32.1%). Most of the adolescents received pocket money (84.3%, $n = 273$), majorly daily (46.9%, $n = 128$), and mostly from their parents (92.3%, $n = 252$).

3.3. SRH behavior of adolescents at Queens Secondary School Enugu

The results in Table 3 reveal that very few of the respondents admitted to having sex before (8.6%, $n = 28$), of which the first sex experience was mainly before 9 years (50.0%, $n = 14$) of age, while the first sexual experience was coerced for more than half of the respondents (60.7%, $n = 17$). Nineteen (67.9%) students were currently having sex with a partner among those who have had sex before, mainly with one sex partner (68.4%, $n = 13$), while 7.4% ($n = 24$ which is 85.7% of those that once had sex) have had unprotected sex. In the past 6 months, 2.8% ($n = 9$ which is 32.1% of those who once had sex and 37.5% of those who once had unprotected sex) have had unprotected sex, while 1.5% ($n = 5$ which is 17.9% of those who once had sex) used

Items	Frequency	Percent (%)
<i>Who are you living with</i>		
Both parents	249	76.9
Single parent	33	10.2
Grandparents	11	3.4
Sibling	3	0.9
Uncle	2	0.6
Aunt	15	4.6
Nephew	1	0.3
Cousin	2	0.6
Guardian (not related by blood)	8	2.5
<i>Gender of the person you are living with if not both parents ($n = 75$)</i>		
Female	58	77.3
Male	17	22.7
<i>If living with your parents, what is your family type ($n = 249$)</i>		
Nuclear	234	94.0
Extended	15	6.0
<i>Type of living arrangement</i>		
Public yard	88	27.2
1 room self-contained	22	6.8
2-bedroom flat	58	17.9
3-bedroom flat	104	32.1
Duplex	48	14.8
4/5-bedroom flat	4	1.2
<i>Do you receive pocket money</i>		
Yes	273	84.3
No	51	15.7
<i>How often do you receive pocket money ($n = 273$)</i>		
Daily	128	46.9
Weekly	48	17.6
Once in 2 weeks	20	7.3
Monthly	55	20.1
Once in 2 months	14	5.1
Quarterly	8	2.9
<i>Source of pocket money ($n = 273$)</i>		
Parents	252	92.3
Siblings	41	15.0
Niece	12	4.4
Nephew	11	4.0
Cousins	19	7.0
Guardian	12	4.4
Boy/male friend	8	2.9
Neighbors	13	4.8

Table 2. Family characteristics and living condition of the students of Queens Secondary School, Enugu, Nigeria ($n = 324$).

Items	Frequency	Percent (%)
<i>Ever had sex before?</i>		
Yes	28	8.6
No	296	91.4
<i>At what age did you have your first sex (n = 28)</i>		
Before 9 years	14	50.0
9–12 years	2	7.1
13–15 years	7	25.0
16–19 years	5	17.9
<i>Were you forced in your first sex experience or was it your own free will (n = 28)</i>		
I was forced (coercion)	17	60.7
It was my own will	11	39.3
<i>Are currently having sex with anyone</i>		
Yes	19	67.9
No	9	32.1
<i>How many people are you having sex with currently (n = 19)</i>		
One	13	68.4
Two	3	15.8
More than two	3	15.8
<i>Ever had unprotected sex (n = 28)</i>		
Yes	24	85.7
No	4	14.3
<i>Have you had unprotected sex in the past 6 months (n = 24)</i>		
Yes	9	37.5
No	15	62.5
<i>Did you use condom the last time you had sex with your partner</i>		
Yes	5	17.9
No	23	82.1
<i>What method do you use to prevent pregnancy during or after sex (n = 28)</i>		
Birth control pills	2	7.1
Condoms	9	32.1
Withdrawal/pull out	5	17.9
Putting lemon slices into the vagina after sex	2	7.1
Putting a piece of kitchen sponge before sex	2	7.1
Using ginger drink after sex	2	7.1
Drinking of hot gin (kai kai), other alcoholic drinks and hot pepper drink after sex	1	3.6
Use of vitamin C supplements after sex	1	3.6

(Continued)

Table 3. Continued

Items	Frequency	Percent (%)
None	16	57.1
<i>Have you ever been pregnant (n = 28)</i>		
Yes	3	10.7
No	25	89.3
<i>How many times have you been pregnant (n = 3)</i>		
Once	2	66.7
More than 2 times	1	33.3
<i>Have you ever removed a pregnancy before (n = 3)</i>		
Yes	3	100
No	0	0
<i>Where did you remove the pregnancy (n = 3)</i>		
At the hospital	1	33.3
At a chemist shop	1	33.3
At home	1	33.3
<i>Have you ever gone for voluntary HIV test and screening</i>		
Yes	12	3.7
No	312	96.3
<i>Have you gone for voluntary HIV test and screening in the past 6 months (n = 12)</i>		
Yes	3	25.0
No	9	75.0
<i>Reason(s) for having sex with someone (n = 28)</i>		
Enjoyed sex	8	28.6
Encouragement from friends	3	10.7
I receive gifts from the person I have sex with	4	14.3
I got money from the person I have sex with	2	7.1
I receive favors from the person I have sex with	2	7.1
It is a part of the process of growth	2	7.1
I should, because all my friends are having sex	3	10.7
It is a way of expressing my love to a boy/male friend	7	25.0
I was forced	5	17.9
<i>Overall SRH behaviour</i>		
Risky	25	7.7
Safe	299	92.3

Note: SRH, sexual and reproductive health.

Table 3. Sexual behavior among students of Queens Secondary School, Enugu.

a condom during their last sex with their partner. The majority of students who once had sex never prevented pregnancy during or after sex (57.1%, $n = 16$); whereas, those who prevented it mainly used condoms (32.1%, $n = 9$) and withdrawal methods (17.9%, $n = 5$). Three of the respondents, which represent 0.9% of the participants and 10.7% of those who have ever had sex, have ever been pregnant. Among the 3 that have ever been pregnant, 66.7% ($n = 2$) had been pregnant once, while 33.3% ($n = 1$) had been more than once. All (100%, $n = 3$) that were ever pregnant (0.9%) have once removed pregnancy. The majority (96.3%, 312) of the respondents have not once gone for voluntary HIV tests and screening. The incidence of risky SRH behavior among the study group is 7.7% ($n = 25$).

3.4. Factors associated with SRH behavior

The findings in Table 4 show that class ($P = 0.003$), whom the adolescents were living with ($P = 0.019$), and whether they received pocket money or not ($P = 0.002$) were the factors significantly associated with sexual and reproductive healthcare behavior of the students. For class, students in SSS 2 were associated more with risky behavior compared with other classes [JSS1 (7.0%), JSS2 (2.9%), SSS1 (6.7%), and SSS2 (19.0%)]. Those living with both parents were associated least with risky behavior [Both parent (5.6%), single parent (18.2%) and non-parents, and foster parents (11.9%)], and those who receive pocket money were least associated with risky behavior [Receive (5.5%) and does not receive (19.6%)].

3.5. Predictors of risky SRH behavior among adolescents at Queens School, Enugu

The logistic regression analysis in Table 5 shows that only non-receipt of pocket money significantly predicted risky SRH behavior, with the odds being 2.7 times higher than those that received pocket money [95% CI (1.002–7.353)]. Age ($P = 0.533$), class ($P = 0.233$), student type ($P = 0.164$), people living with ($P = 0.229$), and living arrangement ($P = 0.514$) were not significant predictors.

4. Discussion

4.1. Sexual and reproductive healthcare behavior among adolescents in Queens School Enugu

The majority of adolescents, according to the study's findings, engage in safe SRH behavior; risky behavior was shown to be very low overall. Engaging in safe SRH behavior among adolescents helps to ensure a healthy

SRH outcome; the prevalence of STIs, unintended pregnancy, and unsafe abortion practices is drastically reduced while promoting the emotional wellbeing and academic excellence of the adolescents. Thus, the finding is commendable and incongruent with that of Ajayi and Okeke,¹⁸ who found that the majority of adolescents engaged in safe behaviors, including lifetime abstinence or abstinence in the past year, consistent use of condoms, and sexual fidelity. Similarly, a low prevalence of risky behavior was reported among adolescents in the study by Srahbzu and Tifeneh.¹⁹

Most of the study participants reported having no history of sexual activity. This may be attributed to the young age of the respondents; and/or under-reporting usually associated with undesirable and sensitive questions like sexual intercourse. Sexual abstinence promotes healthy physical, social, sexual, and emotional wellbeing, as well as good academic performance, confidence, and self-respect. In collaboration with the findings, Isara and Nwaogwugwu⁸ revealed that the majority of the adolescents were sexually inactive. Eze et al.,²⁰ also reported a high prevalence of sexual inactivity among adolescents in their study.

Only a small percentage of respondents reported having had sexual experience, and this could be attributed to adolescent characteristics like interest in the opposite sex and sexual activity curiosity. This is still much of a concern as it might lead to an increased risk of multiple sexual partners and poor sexual health outcomes including, contracting STIs, unsafe abortion, unintended pregnancy, and possibly death from pregnancy and labor complications. The results are in opposition to those of Eyam et al.,²¹ who discovered a high prevalence of sexual activity among adolescents in Cross River State. The results also differ from those of Amoo et al.,²² who reported that more than half of the adolescents in their study had engaged in sexual intercourse. The geographical location of the study could be the reason for the discrepancies in the findings.

Half of the respondents who reported being sexually active in this study had had their first sexual intercourse before 9 years of age. The moderate prevalence of the early sexual debut found in the study could be explained by the fact that the majority of the respondents' first sexual experiences were coerced (i.e., sexual violence and assault). This is quite disturbing and raises an alarm because early sexual initiation can increase the likelihood of many sexual partners, the prevalence of unprotected sex, the risk of STIs, unintended adolescent pregnancy, and unsafe abortions, all of which harm adolescent SRH. Sexual violence has a profound psychological and social effect on the victim, which causes emotions of powerlessness and weakness that can deplete the victim's self-esteem and increase

Items	SRH Behavior, <i>n</i> (%)			Statistic	<i>P</i>
	Risky	Safe	Total		
<i>Age (years)</i>				5.131 ^c	0.077
≤12	4 (4.1)	93 (95.9)	97		
13–14	9 (6.8)	123 (93.2)	132		
≥15	12 (12.6)	83 (87.4)	95		
<i>Class</i>				13.971 ^c	0.003
JSS 1	6 (7.0)	80 (93.0)	86		
JSS 2	3 (2.9)	102 (97.1)	105		
SSS 1	5 (6.7)	70 (93.3)	75		
SSS 2	11 (19.0)	47 (81.0)	58		
<i>Student type</i>				2.961 ^c	0.085
Day student	23 (9.1)	231 (90.9)	254		
Boarder	2 (2.9)	68 (97.1)	70		
<i>Living with</i>				7.263 ^f	0.019
Both parents	14 (5.6)	235 (94.4)	249		
Single parent	6 (18.2)	27 (81.8)	33		
Non-parent & foster parents	5 (11.9)	37 (88.1)	42		
<i>Family type if both parents (n = 249)</i>				-. ^f	1.000
Nuclear	14 (6.0)	220 (94.0)	234		
Extended	0 (0.0)	15 (100.0)	15		
<i>Gender of person if not both parents (n = 75)</i>				0.170 ^f	1.000
Female	9 (15.5)	49 (84.5)	58		
Male	1 (12.5)	7 (87.5)	8		
Foster parents	1 (11.1)	8 (88.9)	9		
<i>Living arrangement</i>				5.979 ^f	0.178
Public yard	8 (9.1)	80 (90.9)	88		
1 room self-contained	4 (18.2)	18 (81.8)	22		
Two-bedroom flat	3 (5.2)	55 (94.8)	58		
Three-bedroom flat	9 (8.4)	98 (91.6)	107		
Duplex	1 (2.1)	47 (97.9)	48		
<i>Pocket money</i>				-. ^f	0.002
Receive	15 (5.5)	258 (94.5)	273		
Does not receive	10 (19.6)	41 (80.4)	51		
<i>Pocket money giver (n = 273)</i>				1.606 ^f	0.450
Parents	10 (4.8)	198 (95.2)	208		
Parents & non-parents	3 (6.8)	41 (93.2)	44		
Non-parents	2 (9.5)	19 (90.5)	21		
<i>Age at sex debut (years)</i>				5.600 ^f	0.083
Before 9	14 (100.0)	0 (0.0)	14		
9–12	1 (50.0)	1 (50.0)	2		
13–15	6 (85.7)	1 (14.3)	7		
16–19	4 (100.0)	0 (0.0)	4		

Note: Statistics used; SRH, sexual and reproductive health; ^cChi-square; ^fFisher's Exact test.

Table 4. Factors associated with sexual and reproductive healthcare behavior.

Items	OR	P	95% CI for OR	
			Lower	Upper
Age (years)	1.144	0.533	0.749	1.749
Class: JSS 1, JSS 2, SSS 1, & SSS 2	1.514	0.233	0.766	2.991
Student type: day vs. boarder	0.329	0.164	0.069	1.574
Living with: Both parents (ref)		0.229		
Single parent	2.807	0.087	0.862	9.143
Foster parents	1.253	0.736	0.338	4.646
Living arrangement: Duplex (ref)		0.514		
Public yard	2.194	0.486	0.240	20.060
1 room self-contained	6.087	0.133	0.576	64.285
2-bedroom flat	1.857	0.608	0.174	19.835
3-bedroom flat	2.852	0.338	0.334	24.372
Non-receipt of pocket money: yes vs. no	2.714	0.050	1.002	7.353
Constant	0.002	0.021		

Note Tests of model coefficients (26.235, $P = 0.003$), Hosmer and Lemeshow Test (3.396, $P = 0.907$).

Table 5. Predictors of risky sexual and reproductive behavior among adolescents at Queens Secondary School, Enugu.

vulnerability to further sexual violence. The victims might struggle with physical, social, mental, emotional, and sexual issues; not to mention that academic struggles could result too. In correspondence with this result, Isara and Nwaogwugwu⁸ disclosed that many adolescents who had their first sexual experience before the age of 15 years were forced and unplanned.⁸

The study's findings also showed that the majority of the sexually active respondents were currently sexually active with only one sexual partner. This may be attributed to the young age of the respondents and probably the fear of the consequences associated with having multiple sexual partners such as contracting STIs. Similarly, Owoeye and Nwaogwugwu²³ revealed that a high proportion of sexually active students had single sexual partners in their study.

More than half of the sexually active adolescents have had unprotected sex. They did not use any form of contraception, like condoms, pills, etc., during the sexual activity. This might be because the majority of the sexual intercourse found among these adolescents was before 9 years of age, coerced, and unplanned. This result is unsettling because of the adverse effect on the physical, social, mental, and sexual health of adolescents. The direct results of unprotected sex include unintended pregnancy, unsafe abortion, and contraction of STIs, and these are met with stigma and shame in Nigeria. Due to the possibility of them dropping out of school, the academic success of adolescents may be impacted, which could have long-term effects. This result is in line with the findings of Eyeberu et al.,²⁴ who reported that the majority of the sexually active participants used condoms inconsistently. More so, Olorunsola et al.,⁵

indicated that female adolescents accounted for more inconsistent use of condoms during sexual intercourse.

Condom and withdrawal methods were the 2 main ways of preventing unintended pregnancy as reported by the respondents in this study. This might be due to the perceived side effects of other methods of contraception. Condoms when used consistently and correctly are highly effective (99%) in preventing pregnancy and STIs. They are a reliable form of contraception and do not have any significant side effects. The withdrawal method does not have any significant side effects and can be combined with other contraception methods to increase effectiveness. However, it does not prevent contraction of STIs and is not as effective as a condom in preventing pregnancy, though, it is about 78% to 80% effective when done correctly. This result resonates with the results of Thepthien and Celyn,²⁶ where adolescents reported that condoms were the most common method of birth control, followed by emergency contraception and withdrawal methods.

All the respondents in this study who had a history of unintended pregnancy had terminated pregnancies at least once that were either carried out in the hospital, chemist shop, or at home. The inability of the students to handle the shame and stigma that come with teenage pregnancy as well as the limiting effect it might have on their academics and future, might have spurred this action. Criminal abortion in Nigeria is illegal and carries a heavy jail sentence of up to 14 years imprisonment. The only form of abortion that is legal in Nigeria is therapeutic abortion, that is, when the life of the pregnant woman is at risk. As a result, pregnant adolescents resort to unsafe abortion methods, leading

to abortion-related complications such as septicemia, severe vaginal bleeding, infertility, and increasing mortality and morbidity rates in the country. In tandem with these findings, Isara and Nwaogwugwu⁸ discovered that the majority of the respondents who had a history of unintended pregnancy had aborted pregnancies at least once in a patent medicine store.

Pleasure and expression of love were reported as the main reasons for engaging in consensual sexual activity by adolescents in this study. This might be attributed to the increased interest in the opposite sex and sexual curiosity associated with the adolescent period. Similarly, Owoeye and Nwaogwugwu²³ reported that expression of love, pleasure, peer pressure, and incentives were reported as the reasons for consensual sex among adolescents.

4.2. Factors associated with sexual and reproductive healthcare behavior among adolescents in Queens School Enugu

In this study, the factors that were significantly associated with the sexual and reproductive healthcare behavior of adolescents were receiving pocket money and the living arrangements of the adolescents. Those living with both parents and receiving pocket money were found to be least associated with risky sexual behavior. The love, care, peace, connection, and social bond experienced by adolescents living with their parents might prevent them from engaging in risky sexual behavior. Tekletsadik et al.,²⁷ reported a similar finding where students who did not live with their families were more than 9 times likely to be engaged in risky sexual behaviors as opposed to those students who did. Additionally, Ajayi and Okeke¹⁸ found, in line with the study's results, that individuals who lived with both parents were reported to have a higher likelihood of practising sexual abstinence.

Adolescent students in SS 2 class were found to be more associated with risky sexual behavior. Students in higher classes see themselves as adults, independent, and capable of making decisions for themselves. This might be the reason for these findings. Quite comparably, Eyam et al.,²¹ reported that class, age, place of residence, residing with parents, and parental monitoring were the determinants of adolescent SRH behavior.

4.3. Predictors of risky SRH behavior among adolescents at Queens Secondary School, Enugu

Only non-receipts of pocket money significantly predicted risky SRH behavior with the odds being 2.7 times

higher than those that receive pocket money. Access to pocket money by the adolescent helps to cater to their basic needs, wherein finance must be attended to for buying pads, cosmetics, wear, snacks/foods, and general upkeep. When adolescents are in want, they might tend to seek inappropriate ways to meet their needs, thereby increasing their vulnerability and making themselves as sexual prey. However, the findings of Sendekie and Worku, and Mekonnen^{28,29} were in opposition to this. Students with more pocket money were more likely to have risky sexual behavior than those with less, indicating that financial freedom might encourage students to experiment with risky sexual practice. This contradicting view might be due to the geographical location of the research participants.

4.4. Implications for nursing

The high rate of safe sexual behavior among teenagers points to the effectiveness of providing comprehensive sex education. Nurses play a critical role in developing and delivering comprehensive SRH education tailored to adolescents. They can also educate the community on the dangers of sexual coercion and sexual exploitation of adolescents. Regarding the association between family living arrangements and SRH behaviors, nurses can collaborate with parents to promote open communication with adolescents and supportive family environments. Nurses can advocate for policies that support adolescent SRH, including school-based health services and economic interventions such as stipends to reduce financial vulnerabilities that may predispose adolescents to risky sexual behaviors. Knowledge of adolescent SRH behaviors and their predictors enables the nurse to collaborate with other healthcare professionals, educators, and parents/guardians to ensure a holistic approach to adolescent SRH. With these, better public health outcomes are promoted, STI transmission is decreased, and unintended pregnancies are decreased.

4.5. Strengths and limitations of the study

The study utilized a well-structured and validated questionnaire with a good reliability coefficient of 0.762, ensuring consistency and reliability of the instrument. The on-the-spot collection of data ensured a 100% return rate of the questionnaires. The sample size was adequately calculated ensuring a robust representation of the adolescent population in the school and effective representation of adolescents in each class to ensure generalizability.

One of the major limitations of the study was the issue of social desirability. Adolescents may have

under-reported risky behaviors or over-reported safe sexual behaviors to align with societal expectations, particularly due to the sensitivity of the questions regarding their sexual activity and reproductive health. However, this was mitigated by upholding the principle of confidentiality, ensuring that respondents' responses cannot be traced back to them as there are no identifiers in the questionnaire, and also allowing respondents to independently and privately fill out the questionnaire without interference. Access to the collected data was strictly restricted to the research team. Another limitation was recall bias, as participants may not accurately remember or report past SRH behaviors, especially events that occurred at a younger age. Students in examination classes (JS 3 and SS 2) were excluded, which may have a limiting effect on the generalizability of the study findings. Lastly, the study was conducted in a single secondary school in Enugu metropolis, limiting the generalizability of the results to other regions, schools, or broader populations of adolescents with different cultural, social, and economic contexts.

5. Conclusions

Despite the prevalence of safe SRH behavior among the majority of the adolescents, a small but significant proportion exhibited risky behaviors in the study. Factors such as receiving pocket money and living arrangements were associated with these behaviors, with the non-recipient of pocket money as a significant predictor of risky SRH behavior. These findings highlight the need for focused interventions that address the economic support and familial influences to promote safe SRH behavior among adolescents. Collaborative efforts of healthcare providers, teachers, and parents are very crucial in equipping adolescents with the right

knowledge, resources, and support necessary for positive SRH outcomes.

Contribution summary statement

Understanding and promoting safe SRH behavior among adolescents is essential for their overall wellbeing. Adolescents can make more informed decisions, lower their risk of contracting STIs and unintended pregnancies, and have healthier transitions into adulthood with the help of information, resources, and support that are sensitive to their cultural background.

Author's contribution

CEI and ACN designed and conceived the study, including data collection and data analysis; they performed the literature search and manuscript preparation and editing. ACN performed the statistical analysis. Both authors reviewed and approved the final manuscript. CEI is the guarantor for this study.

Data availability

Due to privacy and ethical concerns, data for this study will be made available on request.

Ethical approval

This study was approved by the Ethics and Research Committee of the Enugu State Ministry of Health (IRB Approval No.: MH/MSD/REC21/441).

Conflicts of interest

All contributing authors declare no conflicts of interest.

References

1. Ninsiima LR, Chiumia IK, Ndejjo R. Factors influencing access to and utilization of youth-friendly sexual and reproductive health services in sub-Saharan Africa: a systemic review. *Reprod Health*. 2021;18:135.
2. UNICEF. Investing in a safe, healthy and productive transition from childhood to adulthood is critical. Updated April 2022. [https://data.unicef.org/topic/adolescents/overview/#:~:text=There%20are%201.3%20billion%20adolescents,it%2C%20significant%20growth%20and%20development](https://data.unicef.org/topic/adolescents/overview/#:~:text=There%20are%201.3%20billion%20adolescents,it%2C%20significant%20growth%20and%20development.). Accessed June 18, 2023.
3. Mbachu CO, Agu IC, Obayi C, Eze I, Ezumah N, Onwujekwe O. Beliefs and misconceptions about contraception and condom use among adolescents in south-east Nigeria. *Reprod Health*. 2021; 18:7.
4. Abate AT, Ayisa AA, W/Mariam TG. Reproductive health services utilization and its associated factors among secondary school youths in Woreta town, South Gondar, North West Ethiopia: a cross sectional study. *BMC Res Notes*. 2019;12:90.
5. Ndayishimiye P, Uwase R, Kubwimana I, et al. Availability, accessibility, and quality of adolescent Sexual and Reproductive Health (SRH) services in urban health facilities of Rwanda: a survey among social and healthcare providers. *BMC Health Serv Res*. 2020;20:697.

6. World Health Organization. Sexual and reproductive health. 2021. <https://www.paho.org/en/topics/sexual-and-reproductive-health>. Accessed July 2, 2023.
7. Envuladu EA, Massar K, de Wit J. Adolescents' Sexual and Reproductive Healthcare-Seeking Behaviour and Service Utilisation in Plateau State, Nigeria. *Healthcare (Basel)*. 2022;10:301.
8. Isara AR, Nwaogwugwu J. Sexual and reproductive health knowledge, attitude and behaviours of in-school adolescents in Benin City, Nigeria. *Afr J Biomed Res*. 2022;25:121–127.
9. Yaya S, Bishwajit G. Age at first sexual intercourse and multiple sexual partnerships among women in Nigeria: a cross-sectional analysis. *Front Med (Lausanne)*. 2018;5:171.
10. Odo AN, Samuel ES, Nwagu EN, Nnamani PO, Atama CS. Sexual and reproductive health services (SRHS) for adolescents in Enugu state, Nigeria: a mixed methods approach. *BMC Health Serv Res*. 2018;18:92.
11. World Health Organization. Sexual and reproductive health. 2023. <https://www.paho.org/en/topics/sexual-and-reproductive-health>. Accessed July 15, 2023.
12. Zafar H, Ameer H, Fiaz R, Aleem S, Abid S. Low socioeconomic status leading to unsafe abortion-related complications: a third-world country dilemma. *Cureus*. 2018;10:e3458.
13. Kumar S, Kumar A. KAP gap about contraceptives among students of class x and xi of different schools of Nalanda District. *Int J Health Clin Res*. 2021;4:243–246.
14. Adedini SA, Mobolaji JW, Alabi M, Fatusi AO. Changes in contraceptive and sexual behaviours among unmarried young people in Nigeria: evidence from nationally representative surveys. *PLoS One*. 2021;16:e0246309.
15. Napit K, Shrestha KB, Magar SA, et al. Factors associated with utilization of adolescent-friendly services in Bhaktapur district, Nepal. *J Health Popul Nutr*. 2020;39:2.
16. National Population Commission (NPC). Nigeria Demographic and Health Survey Final Reports. Published October, 2019. <https://dhsprogram.com/publications/publication-fr359-dhs-final-reports.cfm>. Accessed July 15, 2023.
17. Byrne ME, Omoluabi E, OlaOlorun FM, Moreau C, Bell SO. Determinants of women's preferred and actual abortion provision locations in Nigeria. *Reprod Health*. 2021;18:240.
18. Ajayi AI, Okeke SR. Protective sexual behaviours among young adults in Nigeria: influence of family support and living with both parents. *BMC Public Health*. 2019;19:983.
19. Srahbzu M, Tirfeneh E. Risky sexual behavior and associated factors among adolescents aged 15-19 years at Governmental High Schools in Aksum Town, Tigray, Ethiopia, 2019: an institution-based, cross-sectional study. *Biomed Res Int*. 2020;2020:3719845.
20. Eze I, Mbachu CO, Ndubuisi MN, et al. Prevalence and sociodemographic determinants of risky sexual behaviour among unmarried adolescents in Southeast Nigeria. *Int J Med Health Dev*. 2023;27:176–184.
21. Eyam LE, Eyam SS, Ekpeyoung B, et al. Determinants of risky sexual behaviour among secondary school adolescents in Cross River State, Nigeria. *Niger J Med*. 2021;30:658–664.
22. Amoo EO, Adekeye O, Omumu F, et al. Drug use and high-risk sexual behaviour among school-going adolescents in Nigeria. *Open Access Maced J Med Sci [Internet]*. 2020;8(E):256–261.
23. Owoeye OG, Nwaogwugwu CJ. Assessment of sexual behaviour and utilization of sexual and reproductive health services among secondary school students in Ekiadolor, Edo state. *J Med Women Assoc Niger*. 2021;6:105–111.
24. Eyeberu A, Lami M, Bete T, et al. Risky sexual behaviour and association factors among secondary school students in Harari regional state: multicenter study. *Int J Afr Nurs Sci*. 2023;18:100520.
25. Olorunsola AM, Muyibi SA, Irabor AE, et al. Pattern and predictors of sexual behaviour among adolescents in Ibadan, Southwest, Nigeria. *Arch Community Med Public Health*. 2021;7:175–181.
26. Thepthien B, Celyn C. Risky sexual behaviour and associated factors among sexually experienced adolescents in Bangkok, Thailand: findings from a school web-based survey. *Reprod Health*. 2022;19:127.
27. Tekletsadik EA, Ayisa AA, Mekonen EG, Workneh BS, Ali MS. Determinants of risky sexual behaviour among undergraduate students at the University of Gondar, Northwest Ethiopia. *Epidemiol Infect*. 2021;150:e2.
28. Sendekie D, Work N. A case study on risky sexual behaviour of undergraduate students in Ethiopia. *J Trop Dis*. 2019;7:1–12.
29. Mekonnen G. Determinants of risky sexual behaviours among adolescents: in cases of selected high school students. *IJSESD*. 2022;13:1–13.