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The Prevalence and Pattern of Risky Sexual Behaviour among Secondary School Adolescents in Yenagoa Local Government Area, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aim: To determine the prevalence, pattern and socio-demographic factors associated with risky sexual behaviour (RSB) among adolescents in secondary schools in Yenagoa LGA, Bayelsa state.
Study Design: A cross-sectional analytical study.
Place and duration: Yenagoa Local Government Area in Bayelsa state. The study was conducted in March/April 2021.
Methodology: The study utilized self-administered questionnaires among 750 secondary school adolescents selected via multistage sampling. The proportion of adolescents with RSB and the

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socio-demographic determinants of RSB were analysed using Chi-square test and binary logistic regression with significance level set at p-value=0.05.
Results: Of the 739 responses analysed, the prevalence of RSB was 156 (21.1%) and the mean age at sexual debut was 13.42±2.62 years. All sexually exposed adolescents had an early sexual debut, 23.7% had multiple sexual partners, and 98.1% reported inconsistent use of condoms. Transactional sex and sexual intercourse after alcohol/illicit drug use occurred in 56.4% and 15.4% of them, respectively. The predictors of RSB were attending a public school (AOR:2.046, 95%CI:1.243 to 3.368), peer pressure (AOR:10.451, 95%CI:6.460 to 16.909), difficulty in communicating with mother (AOR:2.050, 95%CI:1.203 to 3.493) and low maternal education (primary:AOR:2.834, 95%CI:1.300 to 6.181; and secondary: AOR:2.067, 95%CI:1.139 to 3.753). However, age below 18years (10-13years: AOR:0.194, 95%CI:0.051 to 0.741 and 14-17years: AOR:0.259, 95% CI:0.081 to 0.832) was protective of RSB.
Conclusion: RSB is high among adolescents attending secondary schools in Yenagoa. Sex education, peer-based programmes and parent-adolescent communications should be encouraged to reduce the prevalence of RSB among adolescents.

Keywords: Prevalence; pattern; risky sexual behaviour; adolescents.

DEFINITIONS, ACRONYMS, ABBREVIATIONS

Adolescent: *An individual between the ages of 10 and 19 years*
Risky Sexual Behaviour (RSB): *Sexual activities that predispose one to contracting sexually transmitted Infections (STIs) including HIV, and unwanted pregnancy.*
Early Sexual Debut: *First sexual intercourse before the age of 18 years.*
Multiple sexual partnership: Having had sexual intercourse with more than one person before the time of the study.
Unprotected Sexual Intercourse: *Failing to use a condom during sexual intercourse at any time before the study.*
Transactional Sex or Survival Sex: *A non-marital, non-commercial sexual relationship motivated by an implicit assumption that sex will be exchanged for material support or other benefits.*
AOR: *Adjusted Odds Ratio*
CI: *Confidence Interval*
LGA: *Local Government Area.*

1. INTRODUCTION

Adolescence, a transitional stage of development spanning the ages of 10 to 19 years, is characterized by physical, cognitive and mental changes.(WHO 2020) The adolescent often demonstrates increasing sexual curiosity and awareness.(Holland-Hall 2016) This, alongside a desire to sexually experiment, leads to involvement in risky sexual behaviour (RSB), defined as sexual activities that predispose one to contract sexually transmitted infections (STIs) including HIV, and having unwanted pregnancies.(Holland-Hall 2016, Keto et al 2020) Several patterns of risky sexual behaviour that have been identified include early sexual debut, unprotected sexual intercourse, multiple sexual partnerships, transactional sex, and sex under the influence of alcohol and mood enhancing drugs.(Tulloch and Kaufman 2013, CDC 2021, UNAIDS 2021) Over the last few decades, with the early onset of puberty and late marriages due to a quest for formal education, adolescents are becoming more involved in premarital sex, often without caution which is a precursor for both unintended pregnancy and STIs.(WHO 2014) Early sexual debut is associated with a more than twofold increase in the risk for subsequent risky sexual behaviour.(Yaya and Bishwajit 2018). Young people face barriers to assessing contraception which include laws and policies that restrict access based on age or marital status, health workers' bias, unwillingness to acknowledge adolescents' sexual health needs and their inability to obtain contraceptives such as lack of knowledge and finance.(WHO 2014) Many sexually active adolescents also lack self-esteem and are unable to assert themselves or negotiate safe sexual practices with their partners.(WHO 2014).

Nigeria is the most populous nation in Sub-Saharan Africa with adolescents constituting 22%.(Cortez et al 2015) Many adolescents are

sexually active and begin sex at an early age.(NPC 2020) In Nigeria, the national demographic health survey done in 2018 reported a median age for sexual debut of 17.2years for females and 21.7years for males.(NPC 2020) However, recent studies conducted in Uyo and Port Harcourt revealed a decreasing age at sexual initiation with many beginning as early as 11 to 13years of age.(Johnson and Bassey 2019, Gabriel-Job et al 2018). Most of these adolescents engage in risky sexual behaviour due to a huge knowledge gap, personal feelings of invulnerability and barriers in assessing youth- friendly health services including contraception.(WHO 2014). This has resulted in an increased rate of unwanted pregnancy, STIs and HIV among adolescents.(WHO 2014) Half of the 15 to 19-year-olds who are living with HIV globally live in just six countries in the world which include: South Africa, Nigeria, Kenya, India, Mozambique and Tanzania.(Avert 2020). The national adolescent fertility rate in Nigeria is 122 births per 1000 women aged 15- 19years.(NPC 2020) The country also has one of the highest maternal mortality ratio globally at 512 per 100000 live births, and maternal deaths resulting from high-risk teenage pregnancies either from unsafe abortion or delivery complications contribute significantly to this.(NPC 2020).

The prevalence of RSB varies worldwide. Several researches conducted among adolescents in various parts of Africa revealed prevalence rates of 41.1% in Ghana, 10% in Uganda and 11.4% in Ethiopia.(Watsi and Tarkang 2020, Woldemaneau 2020) In Nigeria, studies on the prevalence of RSB are few and have given varying results ranging from 19.2% among in-school adolescents in the southwest region of the country to 64.3% among university students in the south-south region depending on the defining criteria for RSB used.(Olaoye and Agbede 2019, Ebuenyi et al 2021).

According to the 2018 national demographic health survey conducted in Nigeria, nineteen percent of female adolescents had begun sexual intercourse by 15years of age and 57% by 18years.(NPC 2020) By 20years, 7 out of 10 women had been sexually exposed. Also 3% of men aged 20-49 had their sexual debut by 15 years with 3 out of 10 men being sexually active by 20 years.(NPC 2020)

Many teenagers in Bayelsa are already sexually exposed and engage in RSB.(NPC 2020) The median age for first sexual intercourse in Bayelsa is 16.3 years, the earliest among all the states in the south-south region of the country and many have begun sexual intercourse by 10 to 11years of age.(NPC 2020, Adeniji et al 2017) The high level of poverty among the inhabitants of Yenagoa that coexist with the massive wealth displayed by politicians and oil workers who are in the habit of enticing young women with their money, worsens the situation.(The Nation 2018) Bayelsa state has the highest rate of teenage pregnancy in Southern Nigeria.(NPC 2020) This is especially worrisome as many of the unmarried pregnant females opt for unsafe abortion and a few who are unable or unwilling to procure abortion go on to deliver their babies with resultant negative effects on their education, health and future economic power.(The Nation 2018) This not only causes untold hardship for the adolescent and her family but activates a vicious cycle of poverty for her, the child and the society at large.

This study aimed to determine the prevalence, pattern and predictors of risky sexual behaviour among adolescents in Yenagoa local government area. The findings of this study will be useful for advocacy and policy-making in adolescent sexual and reproductive health.

2. MATERIALS AND METHODS

2.1 Study Area and Design

This study was a school-based, cross-sectional analytical study conducted between March and April 2022 among secondary school adolescents (10 to 19 years) in Yenagoa Local Government Area (LGA), the capital of Bayelsa State. It is located in the South-South region of Nigeria with a land area of 1,698km and an estimated population of 470,800 (2016 projection from 2006 census). (Wikipedia 2021) The people speak mainly Ijaw language and English and most of them are civil servants, traders, and subsistent farmers and fishermen. (Wikipedia 2021) The adolescent population in Bayelsa state was 403,844 (from 2006 census). (Wikipedia 2021) The 2020 adolescent population projection from the 2006 census at an annual growth rate of 3% is 614,635.

2.2 Sample Size

Using Fischer's formula for cross-sectional study design and a 10% non-response, a minimum sample size of 735 students was obtained which

was approximated to 750. Eligible students were recruited for the study via multistage random sampling. First, ten wards, that is, two-third (which included 4 urban, 3 semiurban and 3 rural locations) of the fifteen wards in the local government area were selected by simple random sampling. Then the schools in each ward were grouped into private and public schools. Using simple random sampling, one private and one public school (each with JSS1 to SS3) were selected from each of the ten wards (in a ratio of 1:1) giving a total of 20 schools. Proportionate sampling was then used to recruit the number of students from each school and from each class based on the number of enrollees.

2.3 Inclusion and Exclusion Criteria

Adolescents (aged 10 to 19 years) attending secondary schools in Yenagoa LGA who gave assent and whose parents/guardians gave consent. Adolescents absent from school on the day of data collection were excluded. Adolescents who had intellectual disabilities that impaired their ability to read and understand and visually-challenged adolescents were also excluded.

2.4 Study Instrument

The study instrument (questionnaire) used for data collection in this study was developed and adapted from the illustrative questionnaire for interview surveys with young people designed by John Cleland for World Health Organisation,WHO.(Cleland 2001)

2.5 Measurement Variables

Adolescents were considered to have RSB if they engaged in at least one of the following: sexual intercourse before the age of 18 years (early sexual debut), multiple sexual partnerships defined as having more than one sexual partner at any time in the past before the survey, inconsistent use of condom which is failure to use a condom during sexual intercourse at any time in the past before the survey, transactional sex, or sexual intercourse after the use of mood-enhancing drugs or alcohol.

2.6 Data Analysis

Data was analysed using SPSS version 26 software. Categorical data were presented as frequencies and percentages, while continuous data were summarized using appropriate measures of central tendencies (mean or median) and variability (standard deviation or range). Adolescents who engaged in one or more of the highlighted sexual activities were considered as having RSB and constituted the prevalence of risky sexual behaviour among the study population. The proportion of adolescents engaged in each of the sexual activities represented the pattern of RSB. The relationship between the socio-demographic and environmental factors and RSB among adolescents was explored using the Chi-square test. Socio-demographic factors that were associated with adolescents' involvement in risky sexual behaviour were identified using binary logistic regression analysis with level of significance set at P value<0.05.

3. RESULTS

3.1 Socio-demographic Characteristics of Respondents

Seven hundred and fifty questionnaires were administered however, 739 were filled giving a response rate of 98.5%. Respondents ranged from 10 to 19 years with a mean age of 14.08 ± 1.86 years. Females constituted 56.3% of the population and the modal class was senior secondary class 2 (SS 2) as shown in Table 1. There was an almost equal distribution of respondents in public (49.3%) and private (50.7%) schools. Most of the respondents were Christians (98.1%). Four hundred and twenty-eight respondents (57.9%) belonged to the richest wealth quintile as determined by the household wealth index. Also, a large percentage of respondents (60.2%) belonged to high socio-economic class.

3.2 Family Structure and Bond

The majority of the respondent's parents were married (76.5%) as shown in Table 2. Many of the respondents (71.3%) lived in the same household with both parents. More than half of the respondents (58%) found it easy to talk with their fathers however, only about 10% could often discuss sex-related issues with their fathers. On the other hand, 83.4% of the respondents could communicate easily with their mothers and 24.2% of them could often speak with their mothers about issues related to sex as reflected in Table 2.

Table 1. Socio-demographic characteristics of respondents

Variables	Frequency (n=739)	Percentage (%)
Age category		
10-13 years (early adolescence)	283	38.3
14- 17 years(mid-adolescence)	437	59.1
18-19yrs(late adolescence)	19	2.6
Sex		
Female	416	56.3
Male	323	43.7
Class		
JSS 1	99	13.4
JSS 2	114	15.4
JSS 3	116	15.7
SSS 1	140	18.9
SSS 2	144	19.5
SSS 3	126	17.1
School type		
Public	364	49.3
Private	375	50.7
School composition		
Co-educational	689	93.2
Same sex	50	6.8
Religion		
Christainity	725	98.1
Islam	9	1.2
Others	5	0.7
Wealth index		
Richest	428	57.9
Richer	194	26.3
Middle	94	12.7
Poorer	20	2.7
Poorest	3	0.4

Table 2. Family structure and bond

Variables	Frequency	Percentage (%)
Marital status of parents		
Married	565	76.5
single/divorced	174	23.5
Living with parents		
Both parents	527	71.3
One parent	160	21.7
Neither parent	52	7.0
Ease of talking with father		
Very easy	224	30.3
Easy	205	27.7
Difficult	193	26.1
Very difficult	81	11.0
Not at all	36	4.9
Frequency of discussing sex-related issues with father		
Often	75	10.1
Occasionally	107	14.5
Never	557	75.4
Ease of talking with mother		

Variables	Frequency	Percentage (%)
Very easy	410	55.5
Easy	206	27.9
Difficult	68	9.2
Very difficult	37	5.0
Not at all	18	2.4
Frequency of discussing sex-related issues with mother		
Often	179	24.2
Occasionally	190	25.7
Never	370	50.1

Table 3. Association between pattern of risky sexual behaviour and gender

Pattern of RSB	Yes n (%)	No n (%)	Total n (%)	*P*-value	χ^2
Gender	**Early sexual debut**				
Male	72 (22.3)	251 (77.7)	323 (100.0)		
female	84 (20.2)	332 (79.8)	416 (100.0)	0.49	0.481
Total	156 (21.1)	583 (78.9)	739 (100.0)		
	Unprotected sex/inconsistent condom use				
Male	70 (21.7)	253 (78.3)	323 (100.0)		
Female	83 (20.0)	333 (80.0)	416 (100.0)	0.58	0.328
Total	153 (20.7)	586 (79.3)	739 (100.0)		
	Transactional sex				
Male	38 (43.2)	285 (56.8)	323 (100.0)		
Female	50 (12.0)	366 (88.0)	416 (100.0)	0.92	0.011
Total	88 (11.9)	651 (88.1)	739 (100.0)		
	Multiple sexual partnership				
Male	23 (7.1)	300 (92.9)	323 (100.0)		
Female	14 (3.4)	402 (96.6)	416 (100.0)	0.02*	5.391
Total	37 (5.0)	702 (95)	739 (100.0)		
	Sex after use of mood enhancing drug/alcohol				
Male	10 (3.1)	313 (96.9)	323 (100.0)		
Female	14 (3.4)	402 (96.6)	416 (100.0)	0.84	0.420
Total	24 (3.2)	715 (96.8)	739 (100.0)		

**statistically significant*

3.3 Prevalence and Pattern of Risky Sexual Behaviour

Among the respondents, 156 (21.1%) of them have been sexually exposed. The prevalence of RSB among the respondents was 21.1%. All one hundred and fifty-six sexually exposed respondents (100%) had an early sexual debut, 153 (98.1%) reported inconsistent use of condoms / unprotected sexual intercourse and 88 (56.4%) engaged in transactional sex. Also, multiple sexual partnerships and sexual intercourse after the use of alcohol/mood-enhancing drugs were noted in 37 (23.7%) and 24 (15.4%) of the sexually exposed respondents respectively as shown in Table 3. Except for sex after the use of alcohol/mood-enhancing drugs, the various patterns of RSB were more prevalent in males however this was only statistically significant for multiple sexual partnerships.

3.4 Mean Age at Sexual Debut and Gender

The mean and modal ages at sexual debut were 13.42 ±2.62 years and 15 years respectively. Also, the mean ages at sexual debut for males and females were 13.64yrs ±2.43 and13.24yrs ±2.77 respectively as seen in the table and the difference was not statistically significant as seen in Table 4.

Table 4. Association between mean age at sexual debut and gender

Variables	Male N=72(%)	Female N=84(%)	Total N=156	T	*P*-value	95% CI
Mean age at sexual debut	13.64 ±2.77	13.24 ±2.77	13.42 ±2.62	0.954	0.34	-0.429- 1.231
Median (range) at sexual debut	14.00 (5.00-17.00)	14.00 (5.00-17.00)	14.00 (5.00-17.00)			

Table 5. Association between socio-demographic characteristics and RSB

Variables	RSB present n (%)	RSB absent n (%)	Total n (%)	χ^2	*P*-value
Age category					
10-13yrs (early adolescence)	37 (13.1)	246 (86.9)	283 (100.0)	30.885[a]	0.000*
14-17yrs (mid adolescence)	107 (24.5)	330 (75.5)	437 (100.0)		
18-19yrs (late adolescence)	12 (63.2)	7 (36.8)	19 (100.0)		
Sex					
Male	72 (22.3)	251 (77.7)	323 (100.0)	0.481	0.49
Female	84 (20.2)	332 (79.8)	416 (100.0)		
Class					
JSS 1	20 (20.2)	79 (79.8)	99 (100.0)	11.645	0.04*
JSS 2	20 (17.5)	94 (82.4)	114 (100.0)		
JSS 3	16 (13.8)	100 (86.2)	116 (100.0)		
SSS 1	26 (18.6)	114 (81.4)	140 (100.0)		
SSS 2	40 (27.8)	104 (72.2)	144 (100.0)		
SSS 3	34 (27.0)	92 (73.0)	126 (100.0)		
School type					
Public	103 (28.3)	261 (71.7)	364 (100.0)	22.249	0.000*
Private	53 (14.1)	322 (85.9)	375 (100.0)		
School composition					
Co educational	152 (22.1)	537 (77.9)	689 (100.0)	5.534[a]	0.02*
Same sex	4 (8.0)	46 (92.0)	50 (100.0)		
Religion					
Christainity	152 (21.0)	573 (79.0)	725 (100.0)	1.212[a]	0.58
Islam	3 (33.3)	6 (66.7)	9 (100.0)		
Others	1 (20.0)	4 (80.0)	5 (100.0)		
Religious activity attendance					
Everyday	70 (21.7)	253 (78.3)	323 (100.0)	13.199[a]	0.01*
Once weekly	72 (18.7)	313 (81.3)	385 (100.0)		
Once monthly	9 (56.3)	7 (43.8)	16 (100.0)		
Once yearly	1 (33.3)	2 (66.7)	3 (100.0)		
Never	4 (33.3)	8 (66.7)	12 (100.0)		
Pressure to have sex					
Yes	82 (62.1)	50 (37.9)	132 (100.0)	162.308	0.000*
No	74 (12.1)	533 (87.9)	607 (100.0)		

**statistically significant. a- Fisher's Exact used for expected cell count <5*

Table 6. Association between Parental level of education/socioeconomic status and RSB

Variables	RSB present n(%)	RSB absent n(%)	Total n(%)	χ^2	*P*-value
Level of education of mother					
No formal education	17(26.6)	47(73.4)	64(100.0)	24.015	0.000*
Primary	31(33.0)	63(67.0)	94(100.0)		
Secondary	81(23.6)	262(76.4)	343(100.0)		
Tertiary	27(11.3)	211(88.7)	238(100.0)		
Level of education of father					
No formal education	19(26.8)	52(73.2)	71(100.0)	9.878	0.02*
Primary	33(28.9)	81(71.1)	114(100.0)		
Secondary	56(21.7)	202(78.3)	258(100.0)		
Tertiary	48(16.2)	248(83.8)	296(100.0)		
Socioeconomic class					
	84 (18.9)	361 (81.1)	445 (100.0)	9.437	0.01*
High	45 (29.1)	170 (79.1)	215 (100.0)		
Middle	27 (34.2)	52 (65.8)	79 (100.0)		
Low					
Wealth index					
Richest	76 (17.8)	352 (82.2)	428 (100.0)	13.394[a]	0.01*
Richer	41 (21.1)	153 (78.9)	194 (100.0)		
Middle	31(33.0)	63 (67.0)	94 (100.0)		
Poorer	7 (35.0)	13 (65.0)	20 (100.0)		
Poorest	1 (33.3)	2 (66.7)	3 (100.0)		

**statistically significant, a- Fisher's Exact used for expected cell count <5*

3.5 Factors Associated with Risky Sexual Behaviour among Respondents

3.5.1 Association between socio-demographic factors and RSB

The association between socio-demographic factors and RSB is shown in Table 5. Most of the respondents who practiced RSB were in their late adolescence (63.2%) while the early adolescence group had the least number (13.1%) and the difference was statistically significant (*P*<0.001). Also, the class with the highest number of respondents who engaged in RSB were SS2 (27.8%), followed by SS3 (27.0%) and the least was the JS 3 class (13.8%). This difference was statistically significant (*P*=0.04). A larger number of students who had RSB were in public schools (28.3%) compared to private schools (14.1%) and the difference was statistically significant (*P*<0.001). Similarly, co-educational schools had more respondents who engaged in RSB (22.1%) than same-sex schools (8.0%) and this was statistically significant (*P*=0.02).

The majority of the respondents who had RSB had poor religious attendance with RSB being highest among those that attended religious activities once monthly (56.3%), followed by once yearly and never at 33.3% each. RSB was least among those who attended religious activity once weekly (18.7%), and this difference was statistically significant. Also, RSB was significantly higher among respondents who engaged in RSB due to perceived pressure to have sex. (*P*<0.001).

3.5.2 Association between parental level of education/socioeconomic status and RSB

Table 6 shows the association between parental level of education/socioeconomic status and RSB at the bivariate level. The statistically significant factors include maternal and paternal levels of education, socioeconomic class and wealth quintiles.

3.5.3 Association between family dynamics and RSB among respondents

Table 7 depicts the association between family dynamics and RSB among respondents. Living

with parents and communication with mother were statistically significant determinants of RSB among respondents at the bivariate level.

3.6 Multivariate Analysis

The result of multivariate analysis is shown in Table 8. Analysis of variables that were statistically significant at the bivariate level showed that respondents within the age categories of 10-13 years and 14-17 years, school type (public or private), mother's educational level, and communication with mother were significant determinants of RSB among respondents. Class of respondent, school composition (mixed or same-sex), attendance to religious activities, father's level of education, marital status of parents, whether the respondent lived with parents and wealth index were no longer significant.

Respondents within the age groups of 10-13 years were less likely to indulge in RSB than those within 18- 19 years of age (AOR= 0.194, *P*-value= 0.02) as shown in Table 8. Likewise, those within the 14-17 years age category were less likely to practice RSB than those in the 18-19 years age group (AOR=0.259, *P*-value= 0.02). The odds of occurrence of RSB in adolescent students in public schools was twice that of private schools (AOR=2.046, *P*-value= 0.01).

Table 7. Association between family dynamics and RSB among respondents

Variables	RSB present n (%)	RSB absent n (%)	Total n(%)	χ^2	*P*-value
Marital status of parents					
Currently married	109 (19.3)	456 (80.7)	565 (100.0)	4.760	0.34
Currently unmarried	47 (27.0)	127 (73.0)	174 (100.0)		
Living with parents					
Both parents	97 (18.4)	430 (81.6)	527 (100.0)	11.2001	0.00*
One parent	40 (25.0)	120 (75.0)	160 (100.0)		
Neither parent	19 (36.5)	33 (63.5)	52 (100.0)		
Communication with father					
Very easy	53 (23.7)	171 (76.3)	224 (100.0)	7.759	0.10
Easy	33 (16.1)	172 (83.9)	205 (100.0)		
Difficult	38 (19.7)	155 (80.3)	193 (100.0)		
Very difficult	24 (29.6)	57 (70.4)	81 (100.0)		
We don't talk	8 (22.2)	28 (77.8)	36 (100.0)		
Discussing sex- related matters with father					
Often	20 (26.7)	55 (73.3)	75 (100.0)	2.184	0.33
Occasionally	25 (23.4)	82 (76.6)	107 (100.0)		
Never	111 (19.9)	446 (80.1)	557 (100.0)		
Communication with mother					
Very easy	71 (17.3)	339 (82.7)	410 (100.0)	32.936	0.00*
Easy	42 (20.4)	164 (79.6)	206 (100.0)		
Difficult	17 (25.0)	51 (75.0)	68 (100.0)		
Very difficult	21 (56.8)	16 (43.2)	37 (100.0)		
We don't talk	5 (27.8)	13 (72.2)	18 (100.0)		
Discussing sex-related matters with mother					
Often	34 (19.0)	145 (81.0)	179 (100.0)	5.801	0.06
Occasionally	31 (16.3)	159 (83.7)	190 (100.0)		
Never	91 (24.6)	279 (75.4)	370 (100.0)		

** statistically significant*

Table 8. Multivariate analysis of factors associated with risky sexual behaviour

Variables (reference category)[R]	Coefficient B	Adjusted odds ratio (AOR)	*P*-value	95% CI Lower to upper limit
Age category (18-19yrs)[R]				
10-13yrs	-1.642	0.194	0.02*	0.051- 0.741
14-17yrs	-1.350	0.259	0.02*	0.081-0.832
Class category (SSS 3)[R]				
JSS 1	-0.041	0.960	0.93	0.377-2.444
JSS 2	0.220	1.247	0.63	0.505-3.075
JSS 3	-0.387	0.679	0.37	0.290-1.588
SSS 1	-0.027	0.973	0.94	0.471-2.009
SSS 2	0.213	1.237	0.52	0.644-2.378
School type (Private)[R]				
Public	0.716	2.046	0.01*	1.243-3.368
School composition (Mixed)[R]				
Same sex	-1.074	0.342	0.08	0.101-1.152
Religious activity attendance (Never)[R] Always/Sometimes	0.069	1.071	0.93	0.186-6.170
Level of education of mother (tertiary education)[R]				
No formal education	0.485	1.625	0.29	0.666-3.964
Primary	1.042	2.834	0.01*	1.300-6.181
Secondary	0.726	2.067	0.02*	1.139-3.753
Level of education of father (Tertiary education)[R]				
No formal education	0.031	1.032	0.94	0.442- 2.408
Primary	0.265	1.304	0.43	0.672- 2.530
Secondary	-0.224	0.799	0.43	0.459- 1.390
Marital status of parents (separated/divorced)[R]				
Currently married	-0.308	0.735	0.32	0.400- 1.350
Living with parents (Both parent)[R]				
With one parent	0.486	1.626	0.12	0.888-2.977
With neither parent	0.700	2.013	0.10	0.866-4.682
Talking with mother (Easy)[R]				
Difficult	0.718	2.050	0.01*	1.203-3.493
Peer pressure (No)[R]				
Yes	2.347	10.451	0.000*	6.460-16.909
Wealth index (richest)[R]				
Poorest	1.258	3.519	0.37	0.223-55.641
Poorer	0.200	1.221	0.74	0.379-3.937
Middle	0.356	1.428	0.30	0.731-2.791
Rich	-0.700	0.625	0.09	0.361-1.083

** statistically significant. R-reference variable*

Adolescents whose mothers had only primary level of education were almost 3 times more likely to practice RSB than those with a tertiary level of education (AOR=2.834, *P*-value=0.01). Similarly, adolescents whose mothers had a secondary level of education were twice as likely to indulge in RSB as those whose mothers have tertiary education (AOR=2.067, *P*-value= 0.02). The odds of RSB in adolescents who had difficulty communicating with their mothers was

Table 9. Outcome of risky sexual behaviour according to gender

Variable	Outcome of RSB		Total n (%)	*P*-value	χ^2
	Male n (%)	Female n (%)			
Pregnancy &/or STI (N=156)					
Yes	20 (27.8)	30 (35.7)	50 (32.1)	0.31	1.121
No	52 (72.2)	54 (64.3)	106 (67.9)		
Total	72 (46.2)	84 (53.8)	156 (100.0)		
Pregnancy			156		
Yes	15 (20.8)	20 (23.8)	35 (22.4)		
No	57 (79.2)	64 (76.2)	121(77.6)		
Total	72 (100.0)	84 (100.0)	156 (100.0)		
Pregnancy outcome (N=35)			157		
Abortion	3 (20.0)	10 (50.0)	13 (37.1)		
Live birth	5 (33.3)	6 (30.0)	11 (31.4)		
Currently pregnant	6 (40.0)	4 (20.0)	10 (28.6)		
Miscarriage	1 (6.7)	0 (0.00)	1 (2.9)		
Total	15 (100.0)	20 (100.0)	35 (100.0)		
STI			158		
Yes	13 (43.30)	17 (56.70)	30 (19.2)		
No	59 (46.80)	67 (53.20)	126 (80.8)		
Total	72 (100.0)	84 (100.0)	159 00.0)		

twice that of adolescents who had easy communication with their mothers (AOR=2.050, *P*-value= 0.01), and adolescents who felt pressured by their peers and romantic partners to engage in sexual intercourse were 10 times more likely to practice RSB than those who did not experience any form of pressure (AOR=10.451, *P*-value< 0.001).

3.7 Consequences of RSB

Among the respondents with risky sexual behaviour, fifty (32.1%) of them had adverse outcomes of RSB (teenage pregnancy &/or STI), and this was more prevalent in females (30%) than males (20%), however the difference was not statistically significant. Thirty-five (22.4%) of those with adverse outcome got pregnant with thirteen (37.1%) of them resorting to abortion and eleven (31.4%) of these pregnancies resulting in live births as shown in Table 9. Also thirty (19.2%) of the sexually exposed respondents admitted having symptoms suggestive of sexually transmitted infection (STI).

4. DISCUSSION

The prevalence of risky sexual behaviour among the respondents was 21.1%. The pattern of risky sexual behaviour (RSB) among sexually exposed respondents showed an early sexual debut of 100%, inconsistent condom use of 98.1% and transactional sex of 23.7%. Multiple sexual partnership and sexual intercourse after use of alcohol/mood enhancing drugs were 23.7% and 15.4% respectively. The prevalence of RSB from this study is comparable to findings of 19.2% in Osun state, Nigeria (Olaoye and Agbede 2019) and 19.6% in Aksum, Ethiopia (Girmay and Mariye 2019). It is however higher than findings of 14% and 11.4% in Ibadan, Nigeria (Adebayo 2018) and North Schewa, Ethiopia (Woldemaneau 2020) respectively.[23,15] These variations are most likely due to differences in defining criteria for RSB and the population studied.

All sexually exposed adolescents in this study had an early sexual debut which is similar to findings by an Ethiopian study, however another Ethiopian study noted a much lower prevalence of 33.3%.(Girmay and Mariye 2019, Woldemaneau 2020) The difference in findings can be attributed to a difference in the population sampled; this study like the former studied all adolescents in secondary schools while the latter restricted its study population to younger adolescents in the junior secondary grades, and sexual exposure is known to increase with age.(Woldemaneau 2020) Early sexual debut

was commoner in females than in males in this study. This was similarly reported by the Nigerian National Health Survey and a study in Ethiopia. (NPC 2020, Yosef et al 2020). This may be because of the desire of many females for material things which lures them into sex with older men. (Yosef et al 2020)

The high prevalence of unprotected sexual intercourse/ inconsistent use of condom in this study is similar to that reported by another study in Sierra Leone.(Ali et al 2021) However, this is higher than a national prevalence of 63.3–76.7% among unmarried young people using three National Demographic Health Surveys (2008, 2013 and 2018) conducted in Nigeria.(Adedini et al 2021) This is most likely due to differences in definition criteria for inconsistent condom use and the sampled population. It is worth noting that there was an observable increase in the practice of inconsistent condoms across the three surveys with the least in 2008 and the highest in 2018 and the high prevalence in this study may be a reflection of this worrisome trend. This could be the result of an increasing number of teenagers initiating sex earlier in life but lacking the skills, confidence and understanding necessary to practice safe sex.(WHO 2014, Eyam et al 2021)

The prevalence of multiple sexual partnerships in this study is comparable to findings in Ethiopia but lower than findings in Rivers state, Nigeria.(Girmay and Mariye 2019, Ogbonna et al 2023) More than half of the sexually exposed respondents practiced transactional sex and this is higher than the reported prevalence in similar studies in Ibadan and Bayelsa, Nigeria.(Girmay and Mariye 2019, Ebuenyi et al 2021) This may be attributed to the defining criteria for transactional sex. This study defined it as having ever engaged in transactional sex, unlike the other two studies that limited it to a period of 3 months before their surveys. Sexual intercourse after the use of alcohol or mood-enhancing drugs occurred in less than a fifth of respondents in this study and this is lower than reports in the United States and in Ibadan, Nigeria.(CDC 2021, Arasi and Ajuwon 2020) This may be due to environmental and cultural differences in the former and the inclusion of in-school and out-of-school adolescents in the latter to which the out-of-school adolescents contributed a greater proportion to the finding. This study limited its respondents to in-school adolescents which may have accounted for its lower prevalence.

The mean age at sexual debut in this study was 13.42±2.62 years and there was no statistical difference between males and females. This shows that adolescents are initiating sex at earlier ages as also noted by similar studies done at Ekiti and Uyo, Nigeria (Durowade et al 2017, Johnson Sand Bassey2019) which is worrisome as it increases their exposure to adverse effects like lifetime multiple sexual partnerships, contracting STIs/HIV, unwanted pregnancy and its consequences.

Age was a significant determinant of RSB in this study as those in the age categories 10-13 years and 14 to 17 years were less likely to engage in RSB than those older than 18. This is consistent with findings in Nigeria and Mozambique.(Eyam et al 2021, Pengid and Peltzer 2015) Also students in public schools were twice as likely to practice RSB compared to their counterparts in private schools in this study. This is consistent with findings from another study in Delta state, Nigeria.(Akpobome et al 2018) This may be because school authorities frown at such behaviour generally and private schools in particular are stricter in enforcing such rules that will deter RSB among their students.(Johnson and Bassey 2019) Also private schools may engage more in proper sex education of students than public schools.(Akpobome et al 2018)

Mother-adolescent communication was also significantly associated with RSB. Respondents who had difficulty communicating with their mothers were about 2 times as likely to practice RSB as those who found it easy to do so. This was similarly reported in Ogbomosho, Nigeria (Oluyemi et al 2017) and the meta-analysis by Widman et al.(Widman et al 2016) Furthermore, Widman et al (Widman et al 2016) noted that adolescent communication with the mother correlated positively with safer sex practices. The reason why communication with mothers is significant may be because mothers are usually available and more open to communication as noted by Widman et al. (Widman et al 2016) Also, mothers were the second most common source of information on sexuality education among respondents in this study. This may further explain why there is an increased risk of RSB among those who found it difficult to communicate with their mothers.

Pressure from peers and romantic partners was statistically significant for RSB in this study as those who reported feeling pressured by friends

and partners were more likely to practice RSB. This agrees with findings from studies in Ethiopia and Nigeria.(Desale et al 2016, Olajide et al 2020) This is not surprising as during the adolescent period of development, getting the approval of peers to be socially acceptable is an important part of decision-making.(Holland-Hall 2016)

The mother's level of education was also a statistically significant determinant of RSB in this study as respondents whose mothers had primary and secondary education were more likely to indulge in RSB than those with tertiary education. This is consistent with findings in Kigali, Rwanda.(Ndagijimana et al 2023) This might be because mothers with postsecondary educations are better equipped to discuss sexual and reproductive health issues with their teenagers and have more access to trustworthy information on these topics, which helps prevent RSB.(Negeri 2014)

Finally, several of the respondents who engaged in risky sexual behaviour reported negative outcomes such as teenage pregnancy and/or STI, with a few resorting to abortion. This was similarly reported in another study in Osun, Nigeria. (Babatunde and Sanusi 2020) This, along with other significant findings in this study, underscores the importance of implementing strategies to reduce risky sexual behaviour among adolescents.

5. CONCLUSION

In conclusion, findings from this study indicate that the prevalence of RSB among in-school adolescents in Yenagoa LGA is high with adolescents indulging in one or more pattern of RSB. Attending public school, difficulty in communicating with mother, having peer or partner pressure and lower maternal level of education were associated with increased odds of engaging in RSB while being less than 18 years old decreased the odds of practising RSB among adolescents in Yenagoa LGA. Advocating for better communication between parents especially mothers, and their adolescent children, health education and peer based health education programs among adolescents may help in curbing this problem.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

CONSENT

All authors declare that 'written informed consent and assent were obtained from the respondents and parents of respondents (for those less than 18years of age). A copy of the written consent and assent are available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

All authors hereby declare that all study protocols have been examined and approved by the Research and Ethics Committee of the Federal Medical Center Yenagoa, Bayelsa state as well as approved by the State Ministry of Education and they have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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