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Risk and Protective Factors influencing Condom use among Adolescents in Rivers State, Nigeria: A cross-sectional study

^{1,2}Ogbonna VI, ^{2,3}Adeniji FO, ⁴Ilyasu Z

¹Department of Population and Reproductive Health, School of Public Health, University of Port Harcourt, Port Harcourt, Nigeria

²Department of Community Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

³Department of Preventive and Social Medicine, Faculty of Clinical Sciences, College of Health Sciences, University of Port Harcourt, Nigeria

⁴Department of Community Medicine, Bayero University Kano, Nigeria

Corresponding author: Foluke Adeniji, Department of Preventive and Social Medicine, Faculty of Clinical Sciences, College of Health Sciences, University of Port Harcourt, Nigeria; foluke.adeniji@uniport.edu.ng; +2348060284597

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Abstract

Background: Condoms have been shown to be effective in preventing HIV, STIs, and unwanted pregnancies, though many unmarried adolescents and young adults choose not to use condoms at all. This study assessed the facilitators and barriers to condom use among adolescents in Rivers State.

Method: A cross-sectional study design and a structured interviewer-administered questionnaire were used to survey 671 adolescents using a multi-staged sampling technique. Data were analysed with IBM SPSS version 26.

Result: About 356 (53.9%) were females, and 338 (50.4%) lived in rural areas. The median age of the respondents was 18 years. Out of the 671 adolescent respondents, 313 (46.7%) of them have had sexual experiences. The proportion of sexually experienced respondents who used condoms was 192 (61.7%), one method used to prevent pregnancy was a condom 157 (80.1%). Factors that significantly influenced condom use were not being in school, the mother's level of education, and occupation. A lesser proportion of those whose fathers are alive 142 (57.1%), ($\chi^2 = 10.99$; $p < 0.001$), and those who discuss sex-related matters with their fathers 22 (47.8%), ($\chi^2 = 4.42$; $p < 0.035$) use condoms. Condom use was higher among adolescents not currently attending school 141 (65.6%) ($\chi^2 = 4.36$; $p < 0.04$). A greater proportion of those who often go to parties 25 (86.2%) ($\chi^2 = 13.95$; $p < 0.001$) and movies 13 (73.7%) ($\chi^2 = 6.98$; $p < 0.03$) used condoms

Conclusion: There is a need to contextualize appropriate reproductive health interventions for adolescents.

Keywords: Condom use, factors influencing, adolescents, Rivers State.



Introduction

The reproductive health practices and behaviours of adolescents can have lifelong impacts that can either be negative or positive. The WHO defines adolescents as people between the ages of 10-19 years, it is a period of transition from childhood to adulthood.¹ The period of adolescence is characterized by physiological and psychosocial changes and experimentations that put them at risk of sexual and reproductive health problems such as early sexual debut, teenage pregnancy, and unsafe abortion.^{1,2} Adolescents tend to have early onset of sexual intercourse, low use of contraception, and high adolescent pregnancy rates.

Risky behaviours can be influenced by factors like age, sex,³ poor risk perception, poor parental monitoring, and inadequate adolescent health information services.^{4,5} On the other hand, protective behaviours like abstinence from sex, sexual fidelity, and consistent use of a condom, may be influenced by factors such as level of education, living with both parents, parent-adolescent sexual communication, and having refusal skills for unsafe sex can lead to good reproductive health outcomes.⁶ Other protective factors identified were religious inclination, older age of the adolescent, academic expectations, achievements, and parental monitoring.⁷

Risky reproductive health behaviours among adolescents are a global health challenge, it exposes adolescents to health risks that may disrupt normal sexual and reproductive health trajectories.⁸ In the last three decades, a substantial increase has been observed in the proportion of adolescents who engaged in sexual activity while at school^{9,10} and among those who are out of school.¹⁰ Adolescents are known to be an adventurous group and often engage in risky behaviours such as smoking, drinking alcohol, substance use, and early unprotected sexual activity. Its complications as well as early marriage.¹⁰ These risky practices are indulged in for the reason of experimentation and peer influences, owing to the wealth of uncensored information they are exposed to, through an intensifying wave of Westernization, the Internet, and electronic media.

Risky sexual activities could result in varying problems ranging from unwanted pregnancy to abortion, to contracting STDs including HIV, and even to death. It is estimated that 60% of STI cases occur among persons under the age of 24 with one-fourth being between the ages of 15-19 years.¹¹ In 2016, it was reported that 2.1

million people aged between 10 and 19 years were living with HIV, and 260,000 were newly infected with the virus.¹² Adolescents living with HIV rose by 30% between 2005 and 2016. In 2016, 55,000 adolescents died from AIDS-related causes. AIDS is now the leading cause of death among young people in Africa and the second leading cause of death among young people worldwide.¹² Even though condoms are widely available and efficient in preventing HIV, STIs, and unwanted pregnancies, many unmarried adolescents and young adults choose not to use condoms at all or do so inconsistently.¹³

Most risky behaviours are initiated during the adolescence period and are causes of morbidity and mortality. Many studies have looked at the risky sexual behaviour among adolescents and young people; a few have looked at protective sexual practices among this subgroup of the population, they have been mostly drawn from nationally based surveys and in-school populations of young people. There is a growing body of evidence to suggest that focusing not only on risk factors but also on factors that protect adolescents from harm within and across the various levels would lead to the achievement of greater health benefits.^{14,15,16}

Therefore, it is no surprise that the risk and protective factors influencing adolescents' reproductive health should be a thing of concern because the ages at which teenagers engage in sexual activities are decreasing with increased urbanization and modernization of communities. This study will focus on the risk and protective factors influencing condom use. Most of the studies have looked at factors (risk and protective) at mostly the individual (sociodemographic), peer, and a few at the family level there remains a gap in identifying factors at the community and national levels which this study will fill. This research will also contribute to the growing body of knowledge on adolescent reproductive health, provide information to adolescent leaders, inform policy, and plan better age-appropriate reproductive health interventions for adolescents.

Method

The study was conducted in Rivers State, Nigeria. The State is situated in the oil-rich South-South Geo-political zone of the country, one of the most prominent states among the Niger Delta states of the country. Port Harcourt is its capital and largest city. It is bounded to the West by Bayelsa and Delta states, East by Akwa Ibom state, North by Imo, Abia and Anambra states and



South by the Atlantic Ocean. The State has three senatorial districts (Rivers South-East, Rivers-West and Rivers-East) and 23 Local Government Areas (LGA), each consisting of wards made up of rural and urban communities. Rivers State has an estimated population of 7,303,924 million as of 2016. We can say that about 23% of the population is made up of adolescents.

It employed a cross-sectional study design. A structured interviewer-administered questionnaire was used to obtain data from 671 adolescents residing in Rivers State. The sample size was derived based on Cochran's formula for sample size calculation for descriptive study¹⁷, using an estimate of risky sexual behaviour (condom use among adolescents in secondary school) of 31.3% from a similar study by Agunwa et al in South-South, Nigeria⁴ and providing for a further 10% allowance for non-response rate. Therefore, sample size $n =$ Where $n =$ Sample size to be obtained, $Z =$ the normal curve, 1.96 at 95% Confidence Interval, e is the margin of precision (5%), $P =$ prevalence estimates of risky sexual behaviour of 31.3 %, $q = 1-p$.

Applying the formulae, then applying the 10% non-response rate is $330.4/0.9 = 367.1$ approximately 367. Then, a design effect of 1.8 was applied, bringing the sample size to 661. Conventionally, when the expected prevalence is between 25-30%, the expected design effect (DEFF) would be between 1.7 to 1.8. The choice of 1.7 or 1.8 depends on closeness to 25% or 30%. As such, for this study, 1.8 will be chosen as $p = 31.3\%$ which is closer to 30% than 25%. Therefore, an estimated sample size of 661 was used for the study.

A multistage sampling technique was used to select participants for the study.

Stage 1: Selection of Local Government Areas. The first stage involves selecting four local government areas by balloting. A list of all the 23 Local Government Areas (LGAs) was obtained, and four LGAs were selected using the simple random technique (balloting).

Stage 2: Selection of wards. A list of all the wards in each of the four LGAs was obtained, and one ward was selected from each of the LGAs using a simple random technique (balloting).

Stage 3: Selection of a community. A list of all the communities in the ward was obtained, and one community was selected in each of the wards by balloting.

Stage 4: Selection of study respondents. In each of the selected communities, the starting house was randomly

selected by spinning a bottle in the middle of the community. Thereafter, houses in the direction of the bottle were counted and the starting house was randomly selected from the list by balloting. Then, consecutive residential houses and households were used. In each house, a sequential household with adolescents was approached, and one adolescent who met the study inclusion criteria and gave consent was included in the study. Where there was more than one such adolescent, one was randomly (balloting) selected for inclusion in the study after the informed consent process. The questionnaire was administered to respondents who met the eligibility criteria till the selected number of participants in that ward was achieved (164 participants per community in each ward, that is dividing the sample size by the number of wards).

The following parts made up the questionnaire.

Section A – Economic and socio-demographic data like age Sex marital status and so on. Socioeconomic data like the occupation of mother and father as well as the level of education. The occupation of parents was classified as:

Professionals, (Senior public servants, owners of large business centres, senior military officers, large-scale contractors),

Non-academic professionals (e.g., nurses, secondary school teachers, secretaries, owners of medium-sized businesses, intermediate-grade public servants)

Non-manual skilled workers (including clerks, typists, telephone operators, junior schoolteachers, drivers)

Unskilled (Petty traders, labourers, messengers)

Unemployed (full-time housewives, students, subsistence farmers)

Section B – Prevalence of activities related to reproductive health (condom use).

Section C - Risk and protective factors affecting reproductive health behaviours at the personal/individual, peers, family, community, and national domains.

Data analysis: Data was checked for completeness, and extracted from the questionnaires into Microsoft Excel version 2016, where it will be coded and cleaned, sorted, pre-processed, and then imported into the Statistical Package for Social Science (SPSS) version 26 and analysed. Following exploratory data analysis, categorical data from the explanatory variables such as the socio-demographic characteristics, factors (risk and protective) in the domains of peer, family, community, and national and the outcome variables (condom use), was presented in the form of frequencies and percentages with results

presented in tables and charts, while continuous data was presented as means and standard deviations (normality of data was also checked). Where the data is not normally distributed, the continuous data was presented as the median and interquartile range (IQR).

Chi-square (χ^2) test analysis was performed to test for association in proportions between the explanatory variables and the outcome variables and to determine the level of statistical significance between the variables associated.

Bivariate Logistic Regression analysis was performed to determine the odds of association of the various factors (risk and protective) and condom use using odds ratio, (ORs). All ORs were reported with their 95% CI and corresponding p values. Multivariate Logistic Regression analysis was done where applicable to adjust for the effect of confounding variables. An observation was said to be statistically significant if the “*p-value* is less than or equal to 0.05 (≤ 0.05)” at a 95% confidence interval.

Ethical approval was obtained from the Research and Ethics Committee of the University of Port Harcourt with the approval number UPH/CEREMAD/REC/MM78/040. Appropriate agreement (Consent for participants 18 years and above, assent for those less than 18 years as well as consent from their parents/guardian) was sought from participants who signed the consent form before the survey to ensure their willingness to participate in the study, and they were told that they have a right to refuse to participate or to withdraw at any time.

Results

Table 1 shows that more than half of the respondents 356 (53.1%), were females, about half 338 (50.4%) lived in places described as rural, and a majority 642 (95.7%) were single. As per the level of education completed, 215 (32.3%) had senior secondary education while 161 (24.0%) had primary and 56 (8.3%) had no education. For religion, 57.7% were Protestants, while 32.5 % were Catholics. Two hundred and twenty-eight (34%) are currently working for pay. Those currently attending school are 267 (39.8%).

Table 1: Socio-demographic characteristics of adolescent respondents, Rivers State, Nigeria

Characteristics	Freq No. (%)
Residence	

Characteristics	Freq No. (%)
N=671	
Rural	338 (50.4)
Urban	333 (49.6)
Sex	
Male	315 (46.9)
Female	356 (53.1)
Age group	
10-14	31 (4.6)
15-17	24 (3.6)
18-19	616 (91.8)
Religion	
Catholic	218 (32.5)
Protestant	387 (57.7)
Muslim	40 (6.0)
None	26 (3.9)
Importance of religion	
Very important	168 (25.0)
Important	428 (63.8)
Not important	75 (11.2)
Marital status	
Single	642 (95.7)
Ever married	29 (4.3)
Education Completed	
No Formal	56 (8.4)
Primary	161 (24.0)
Junior Secondary	213 (31.7)
Senior Secondary	215 (32.0)
Post-secondary	26 (3.9)
Current school attendance	
Yes	267 (39.8)
No	404 (60.2)
Currently working for pay	
Yes	228 (34.0)
No	443 (66.0)

Table 2: Sexual activity and condom use among adolescent respondents, Rivers State, Nigeria

Characteristics	Frequency
No. (%)	
N=671	
Sexual activity	
Ever had sex	
Yes	313 (46.7)
No	358 (53.4)
One method used to prevent pregnancy (n=196)	
Condoms	157 (80.1)
Birth control pills	18 (9.2)



Characteristics	Frequency No. (%) N=671	Characteristics	Frequency No. (%) N=671
Not sure	12 (6.1)	Yes	192 (61.7)
Withdrawal or some other method	7 (3.6)	No	119 (38.3)
A shot (such as Depo-Provera), patch (such as Ortho Evra), or birth control ring (such as NuvaRing)	1 (0.5)	As shown in Table 2, 313 (46.7%) of the respondents have had sexual experiences. The proportion of sexually experienced respondents who ever used condoms was 192 (61.7%), one method used to prevent pregnancy among the majority of the respondents was condoms 157 (80.1%), followed by using a birth control pill 18 (9.2%).	
An IUD (such as Mirena or ParaGard) or implant (like Implanon or Nexplanon)	1 (0.5)		

Condom use (n=311)

Table 3: Sociodemographic factors (facilitators and barriers) influencing condom use among adolescent respondents, Rivers State, Nigeria

Variables	Condom Use (Freq %) n=311		Total	Chi-square (P-value)
	Yes	No		
Age				0.064 (0.8)
15-19	188 (61.8)	116 (38.2)	304 (100.0)	
10-14	4 (57.1)	3 (42.9)	7 (100.0)	
Sex				0.02 (0.88)
Female	113 (61.4)	71 (38.6)	184 (100.0)	
Male	79 (62.2)	48 (37.8)	127 (100.0)	
Importance of religion				0.16 (0.68)
Not important	29 (64.4)	16 (35.6)	45(100.0)	
Very Important/Important	163(61.3)	103 (38.7)	266 (100.0)	
Educational level				1.50 (0.87)
No education/primary	25 (54.3)	21 (45.7)	46 (100.0)	
Secondary	154 (62.6)	92 (37.4)	246 (100.0)	
Tertiary	13 (68.4)	6 (31.6)	19 (100.0)	
Currently attending school				4.36 (0.04)*
Yes	51 (53.1)	45 (46.9)	96 (100.0)	
No	141 (65.6)	74 (34.4)	215 (100.0)	
Currently working for pay				1.12 (0.289)
Yes	93(58.9)	65 (41.1)	158 (100.0)	
No	99 (64.7)	54 (35.3)	153 (100.0)	
Who you reside with				6.358 (0.09)
Both Parents	51 (73.9)	18 (26.1)	69 (100.0)	
Single Parents	48(55.2)	39 (44.8)	87 (100.0)	
Relatives/Others	61 (58.7)	43 (41.3)	104 (100.0)	
Self	32 (62.7)	19 (37.3)	51 (100.0)	
Educational level-mother				6.15 (0.04)*
Post-secondary	27 (75.0)	9 (25.0)	36 (100.0)	
Secondary/Grade II Teacher's education	120 (63.5)	69 (36.5)	189 (100.0)	
Lower (Primary & lower)	45 (52.3)	41 (47.7)	86 (100.0)	
Occupation-mother				6.52 (0.03)*



Variables	Condom Use (Freq %) n=311		Total	Chi-square (P-value)
	Yes	No		
Upper (Professionals & non-academic professionals)	34 (72.3)	13 (36.8)	47 (100.0)	
Middle (Non-manual skilled workers)	60 (68.2)	28 (34.1)	88 (100.0)	
Lower (Petty traders & Unemployed)	98 (55.7)	78 (48.7)	176 (100.0)	

*Statistically significant ($p \leq 0.05$)

Table 3 shows the socio-demographic influencing condom use among adolescents. As shown, the educational level of mother was found to be statistically associated with condom use. That is, condom use was higher 27 (75%), among those whose mothers had post-secondary educational level compared to secondary 120 (63.5%) and primary/lower 45 (51.3%) ($\chi^2 = 6.15$; $p < 0.04$). It was also higher among respondents not currently attending school 141 (65.6%), compared to those in school 51 (53.1%). These differences in proportion were statistically significant $p \leq 0.05$.

Table 4: Individual domain Factors (facilitators and barriers) influencing condom use among adolescent respondents, Rivers State, Nigeria

Variables	Condom Use (Freq %) n=311		Total	Chi-square (P-value)
	Yes=192	No=119		
Believe that it is OK to 'date'				10.99 (0.004)*
Yes	124 (57.7)	91(42.3)	215 (100.0)	
No	10 (47.6)	11 (52.4)	21 (100.0)	
Not sure	58 (77.3)	17 (22.7)	75 (100.0)	
Believe that it is OK to hug/touch				0.52 (0.773)
Yes	137 (60.9)	88 (39.1)	225(100.0)	
No	36 (62.1)	22 (37.9)	58 (100.0)	
Not sure	19 (67.9)	9 (32.1)	28 (100.0)	
Believe that sexual intercourse is OK if a couple loves each other				5.77 (0.56)
Yes	133 (58.3)	95 (47.1)	228 (100.0)	
No	35 (66.0)	18 (34.0)	53 (100.0)	
Not sure	24 (80.0)	6 (20.0)	30 (100.0)	
Believe in female/male pre-marital virginity				2.99 (0.23)
Yes	97 (57.4)	72 (42.6)	169 (100.0)	
No	57 (66.3)	29(33.7)	86 (100.0)	
Not sure	38 (67.9)	18 (32.1)	56 (100.0)	
Believe in abstinence				4.04 (0.12)
Yes	47 (56.0)	37 (44.0)	84 (100.0)	
No	99 (60.7)	64 (39.3)	163 (100.0)	
Not sure	46 (71.9)	18 (28.1)	64 (100.0)	
Believe that sex is alright if a contraceptive is used				3.91 (0.14)
Yes	106 (57.3)	79 (42.7)	185 (100.0)	



No	50 (69.4)	22 (30.6)	72 (100.0)
Not sure	36 (66.7)	18 (33.3)	54 (100.0)
10.72 (0.005)*			
Believe that boys should force sex			
Agree	58 (62.4)	35 (37.6)	93 (100.0)
Disagree	90 (55.2)	77 (44.8)	163 (100.0)
Not sure	44 (80.0)	11 (20.0)	55 (100.0)

*Statistically significant ($p \leq 0.05$)

Table 4 shows the individual domain factors influencing condom use (among adolescents in Rivers State. As shown, those who believe that it is alright to 'date', and that boys should 'force sex' were shown to have a significant association with condom use. A greater proportion of those who were unsure about the belief that it is alright to 'date' 58 (77.3%) used condoms than those who believed 124 (57.7%). Likewise, a greater proportion of those who were unsure about the belief that boys should force sex 44 (80.0%) used condoms than those who agreed 58 (62.4%). these differences in proportion were statistically significant $p \leq 0.05$.

Table 5: Peer domain factors (facilitators and barriers) influencing condom use among adolescent respondents, Rivers State, Nigeria

Variables	Condom Use (Freq %)		Total	Chi-square (P-value)
	Yes =192	No =119		
Peer Domain				
<i>Friends think that one-night stands are OK</i>				5.43 (0.07)
Agree	78 (70.4)	59 (29.6)	137 (100.0)	
Not sure	80 (39.6)	34 (60.4)	114 (100.0)	
Disagree	34 (32.6)	26 (67.4)	60 (100.0)	
<i>Friends think that sexual intercourse is alright if a couple loves each other</i>				2.11 (0.35)
Yes	118 (61.1)	75 (38.9)	193 (100.0)	
No	46 (58.2)	33 (41.8)	79 (100.0)	
Not sure	28 (71.8)	11 (28.2)	39 (100.0)	

Table 5 shows that a greater proportion of those who agreed that their friends think that a one-night stand is okay used condom 78 (70.4%) than those who disagreed 34 (32.6%). A greater proportion, 28 (71.8%) of those who were unsure that their 'friends think that sexual intercourse is alright if a couple loves each other' used condoms than those who agreed 118 (61.1%) These differences in proportion were however not statistically significant.

Table 6: Family domain factors (facilitators and barriers) influencing condom use among adolescent respondents, Rivers State, Nigeria

Variables	Condom Use (Freq %)		Total	Chi-square (P-value)
	Yes =192	No =119		
Father alive				
No	51 (79.7)	13 (20.3)	64 (100.0)	10.99 (0.001)*
Yes	142 (57.1)	106 (42.9)	247 (100.0)	



Variables	Condom Use (Freq %)		Total	Chi-square (P-value)
	Yes n=311	No n=119		
Father lives in the same household as you				0.017 (0.89)
No	116 (62.0)	71 (38.0)	187 (100.0)	
Yes	76 (61.3)	48 (38.7)	124 (100.0)	
Find it difficult or easy to talk with father				0.72 (0.39)
Average/difficult/do not see him	119 (63.6)	68 (36.4)	187 (100.0)	
Very easy/easy	73 (58.9)	51 (41.1)	124 (100.0)	
Discuss sex-related matters with the father				4.42 (0.035) *
No	170 (64.2)	95 (35.8)	265 (100.0)	
Yes	22 (47.8)	24 (52.2)	46 (100.0)	
Mother alive				3.21 (0.07)
No	67 (69.1)	30 (30.9)	97 (100.0)	
Yes	125 (58.4)	89 (41.6)	214 (100.0)	
Mother lives in the same household as you				0.26 (0.87)
No	97 (62.2)	59 (37.8)	156 (100.0)	
Yes	95 (61.3)	60 (38.7)	155 (100.0)	
Find it difficult or easy to talk with the mother				0.39 (0.844)
Average/difficult/do not see him	114 (61.3)	72 (38.7)	186 (100.0)	
Very easy/easy	78 (62.4)	47 (37.6)	125 (100.0)	
Have older siblings				11.29 (0.001)*
No	85 (52.8)	76 (47.2)	161 (100.0)	
Yes	107 (71.3)	43 (28.7)	150 (100.0)	
Find it difficult or easy to talk with siblings (n=305)				6.94 (0.008) *
Average/difficult/do not see him	95 (54.6)	79 (45.4)	174 (100.0)	
Very easy/easy	91 (69.5)	40 (30.5)	131 (100.0)	

*Statistically significant ($p \leq 0.05$)

Table 6 shows that factors like having father alive, and discuss sex-related matters with father, as well as having older siblings, and found it easy to discuss with siblings were significant factors $p \leq 0.05$. A lesser proportion of those whose fathers are alive 142 (57.1%) used condoms, compared to those whose father were not 51 (79.7%). Likewise, a lesser proportion of those whose fathers discuss sex-related matters with 22 (47.8%) used condoms. A greater proportion of those who have older siblings 107 (71.3%) use condoms, likewise those who find it easy to discuss with siblings 91 (69.5%) compared to those who do not.



Table 7: Community and national domains factors influencing condom use among adolescent respondents, Rivers State, Nigeria

Variables	Condom Use (Freq %)		Total	Chi-square (P-value)
	Yes n=311	No n=119		
Go to clubs or parties where young people dance				13.95 (0.001) *
Often	25 (86.2)	4 (13.8)	29 (100.0)	
Occasionally	139 (62.9)	82 (37.1)	221 (100.0)	
Never	28 (45.9)	33 (54.1)	61 (100.0)	
Go to the movies				6.98 (0.030) *
Often	13 (73.7)	6 (26.3)	19 (100.0)	
Occasionally	129 (44.6)	65 (55.4)	194 (100.0)	
Never	50 (47.5)	48 (52.5)	98 (100.0)	
Drink alcohol				0.59 (0.75)
Often	18 (56.2)	14 (43.8)	32 (100.0)	
Occasionally	131 (63.0)	77 (37.0)	208 (100.0)	
Never	43 (60.6)	28 (39.4)	71 (100.0)	
Smoke cigarettes				0.94 (0.624)
Often	13 (68.4)	6 (31.6)	19 (100.0)	
Occasionally	76 (63.9)	43 (36.1)	119 (100.0)	
Never	103 (59.5)	70 (40.5)	173 (100.0)	
Exposure to mass media				4.32 (0.116)
Often	54 (54.0)	46 (46.0)	100 (100.0)	
Occasionally	101 (63.9)	57 (36.1)	158 (100.0)	
Never	37 (69.8)	16 (30.2)	53 (100.0)	
Engaged in healthy after-school programs				1.37 (0.50)
Often	14 (63.6)	8 (36.4)	22 (100.0)	
Occasionally	133 (63.6)	76 (36.4)	209 (100.0)	
Never	45 (56.2)	35 (43.8)	80 (100.0)	
Perceive your neighbourhood have high crime rates				1.32 (0.52)
Often	44 (65.7)	23 (34.3)	67 (100.0)	
Occasionally	110 (59.1)	76 (40.9)	186 (100.0)	
Never	38 (65.5)	20 (34.5)	58 (100.0)	

*Statistically significant ($p \leq 0.05$)

Table 7 shows that a greater proportion of those who often go to parties 25 (86.2%) and movies 13 (73.7%) used condoms, compared to those who never did. These differences in proportion were statistically significant, $p \leq 0.05$.



Table 8: Bivariate and Multivariate results for factors influencing condom use among respondents at all the domains

Variables	Condom Use (Freq %)		cOR [95% CI]	p- value	aOR [95% CI]	P- value
	n=311 Yes n=192	No n=119				
Currently attending school						
No ^R	140 (65.9)	74 (34.4)	-	-	-	-
Yes	51(53.1)	45 (46.9)	0.6 [0.36-0.97]	0.03*	0.6 [0.35-1.11]	0.110
Educational level-mother						
Post-secondary	27 (75.0)	9 (25.0)	2.7 [1.15-6.49]	0.02*	0.58 [0.19-1.69]	0.320
Secondary/Grade II Teacher's education	120 (63.5)	69 (36.5)	1.6 [0.28-0.83]	0.08	0.88[0.47-1.65]	0.690
Lower (Primary & lower) ^R	45 (52.3)	41 (47.1)	-	-	-	-
Occupation-mother						
Upper (Professionals & non-academic professionals)	34 (72.3)	13 (36.8)	2.1 [1.03-4.21]	0.04*	0.65 [0.27-1.55]	0.330
Middle (Non-manual skilled workers)	60 (68.2)	28 (34.1)	1.7 [0.99-2.92]	0.05*	0.75 [0.39-1.42]	0.370
Lower (Petty traders & Unemployed) ^R	98 (55.7)	78 (48.7)	-	-	-	-
Individual domain						
Believe that it is all right to 'date'						
Yes	124 (57.7)	91 (42.3)	0.41 [0.2-0.8]	0.004*	0.75 [0.31-1.79]	0.518
No	10(47.6)	11 (52.4)	0.27 [0.1-0.75]	0.012*	1.63 [0.46-5.75]	0.445
Not sure ^R	58 (77.3)	17 (22.7)	-	-	-	-
Believe that it is Ok to hug/touch						
Yes	137 (60.9)	88 (39.1)	4.19 [1.6-10.7]	0.003*	0.46 [0.12-1.81]	0.273
No	36 (62.1)	22 (37.9)	2.12 [0.8-6.03]	0.15	0.35 [0.97-1.30]	0.118
Not sure ^R	19 (67.9)	9 (32.1)	-	-	-	-
Believe that boys should force sex						
Agree	58 (62.4)	35 (37.6)	0.41 [0.19-0.9]	0.03*	0.62 [0.36-1.89]	0.404
Disagree	90 (55.2)	77 (44.8)	0.31 [0.15-0.6]	0.02*	1.18 [0.36-3.86]	0.774
Not sure ^R	44 (80.0)	11 (20.0)	-	-	-	-
Family domain.						
Father alive						
No	51 (79.7)	13 (20.3)	2.95 [1.53-5.70]	0.001*	2.6 [1.3-5.4]	0.009*
Yes ^R	142 (57.1)	106(42.9)	-	-	-	-
Discuss sex-related matters with the mother						
No	170 (64.2)	95 (35.8)	1.86 [0.99-3.47]	0.052	2.7 [1.3-5.6]	0.008*
Yes ^R	22 (47.8)	24 (52.2)	-	-	-	-
Have older siblings						
No	95 (54.6)	79 (45.4)	0.53 [0.33-0.85]	0.009*	0.5 [0.3-0.95]	0.034*
Yes ^R	91 (69.5)	40 (30.5)	-	-	-	-
Community and national domain						
Go to clubs or parties						
Often	25 (86.2)	4 (13.8)	7.37 [2.29-22.72]	0.001*	0.2 [0.4-0.6]	0.005*
Occasionally	139 (62.9)	82 (37.1)	1.99 [1.13-3.54]	0.018*	0.6 [0.3-1.3]	0.201
Never ^R	28 (45.9)	33 (54.1)	-	-	-	-
Go to the movies						
Often	13 (73.7)	6 (26.3)	2.08 [0.73-5.92]	0.17	0.8 [0. 2-2.6]	0. 651
Occasionally	129 (44.6)	65 (55.4)	1.91 [1.16-3.13]	0.011*	0.6 [0.4-1.1]	0.109
Never ^R	50 (47.5)	48 (52.5)	-	-	-	-



Table 8 shows lower odds of condom use among adolescents in school compared to those not in school (aOR=0.6, 95% CI: 0.36-0.97, p=0.03). The study showed higher odds of condom use among adolescents whose mothers have post-secondary education (cOR=2.7, 95% CI: 1.15-6.49, p=0.02) than those with primary or lower education. There were higher odds of condom use among adolescents whose mothers have professional occupations (aOR=2.1, 95% CI: 1.03-4.21, p=0.04) than those whose mothers are petty traders and unemployed. The “Believe that it is alright to 'date', Believe that it is alright to hug/touch, and believe that boys should force sex were associated with condom use. The study showed lower odds of condom use among adolescents who did not believe that it is alright to 'date' (cOR=0.27, 95% CI: 0.09-0.75, p=0.004), compared to those who believed. It showed higher odds of condom use among adolescents who believe that it is OK to hug/touch (cOR=4.19, 95% CI: 1.64-10.7, p=0.003), compared to those who do not believe and those not sure. The study shows lower odds of condom use among adolescents who disagreed that boys should force sex

Discussion

The study determined the factors (risk and protective) influencing condom use among adolescents in communities in Rivers State. It showed that nearly half of the respondents were already sexually active. Indicating that a lot of young people engage in sexual activity at an early age.

More than half of the respondents in this study used condoms. This shows that they recognize the need to protect themselves from sexually transmitted diseases as well as prevent pregnancy. The proportion of condom use in this study was higher than that of a study in South-South Nigeria,⁴ an Ethiopian study that reported below average,¹⁸ and a South African study that reported.¹³ The observed variation may be due to differences in tools as well as the studied populations.

Condom use was commoner among those who were not in school, whose mothers had post-secondary levels of education, and with professional and non-academic professional occupations. These are otherwise facilitators of condom use and are protective factors. Adolescents who are not in school, these group may be older adolescents who are awaiting admission into the University and have more knowledge about condoms as a preventive and protective reproductive health commodity. Similarly, a high level of education and profession among mothers of respondents points to a

(cOR=0.31, 95% CI: 0.15-0.64, p=0.02), compared to those who agreed. Respondents whose fathers were not alive, and those who do not discuss sex-related matters with mothers are 2.6 times (aOR=2.6, 95% CI: 1.3-5.4, p=0.009), and 2.7 times (aOR=2.7, 95% CI: 1.3-5.6, p=0.008), more likely to use condoms than those whose fathers were alive and those who discuss sex-related matters with their mothers respectively. It showed lower odds of condom use among those who had no older sibling (aOR=0.5, 95% CI: 0.3-0.95, p=0.034), compared to those with. Respondents who went to parties often and occasionally were 7.37 times (cOR=7.37, 95% CI: 2.29-22.72, p=0.001), and 1.99 times (cOR = 1.91, 95% CI: 1.16-3.13, p=0.011), more likely to use a condom compared to those who never went, at the bivariate level. After adjusting for confounders, it showed lower odds of condom use among adolescents who often go to parties (aOR=0.2, 95% CI: 0.4-0.6, p=0.005) compared to those who never went.

higher socioeconomic status which may imply more access to condoms as well as the ability to afford it. Whereas lower levels of mothers' education, and mothers working in a lower cadre job were barriers to condom use

Individual domain factors like believing that it is all right to 'date', hug/touch, and that boys should force sex, were factors associated with condom use. None of the peer domain factors were shown to be significant. Family domain factors like not having a father alive, and not discussing sex-related matters with mothers showed an increased likelihood of condom use, while not having older siblings showed lower odds of condom use among adolescents.

Parental guidance and appropriate sex education may serve to delay the onset of sexual debut, while adolescents who have lost their fathers may engage early in sexual activities, they are more likely to work to support the family and are often exposed to situations where they might have to engage in sexual activities.

This study's findings are in tandem with a study by Onajole et al., which showed that schooling was protective for girls but not for boys.¹⁹ A study by de Torres also corroborates this finding, it showed that protective factors were higher education, perceived risk of contracting HIV, knowledge of where to buy a condom, and a history of STIs.^{15,20} It also showed that



low parental communication, lack of sex education, and social stigma, were barriers to condom use among adolescents. A study by Bingenheimer et al., in Ghana, is also in tandem with this study's findings, it showed no peer context variables were significantly associated with condom use with the most recent partner.²¹ Several studies corroborated the findings of this study it reported that discussion with the family/relatives and parents facilitated condom and contraceptive use.^{18,22}

The community/national domain factors like those who go to parties had higher odds of condom use. This may suggest that going to parties and movies may be a harm reduction (an alternative to abstinence) approach for adolescents. Parties and movies may be places where free condoms are provided which serves to promote condom use. A developmentally appropriate strategy for the primary and secondary prevention of risky behaviour in the adolescent population is harm reduction. There are numerous such instances of damage reduction tactics that have been successfully used. These include seat belt laws, condom vending machines in high schools, and initiatives promoting healthy sports participation (eg, wearing bike helmets, life vests for boating, and hockey visors)²³.

Implications of the findings

The lower odds of condom use among adolescents in school highlight the need for targeted interventions within educational settings. School-based sexual education programs should address factors influencing condom use, such as knowledge, attitudes, and social norms. The association between higher odds of condom use and mothers with post-secondary education suggests that socioeconomic status plays a role. Interventions should consider incorporating strategies that empower families, particularly those with lower education levels, to enhance awareness and support for safe sexual practices. The higher odds of condom use among adolescents with mothers in professional occupations emphasize the role of family dynamics and socioeconomic conditions. Tailored interventions should address the unique challenges faced by adolescents from diverse family backgrounds, including those with mothers in petty trading or unemployment. Additionally, the study identifies specific groups at higher risk of not using condoms, such as adolescents not in school and those with mothers in lower socioeconomic positions. Public health initiatives should prioritize these vulnerable populations to ensure that interventions are reaching those who may face greater barriers to accessing and using condoms.

Strength and Limitations

The strength of the study is drawn from the fact that the study employs a quantitative research design, which allows for the analysis of numerical data, providing statistical rigour and facilitating the identification of associations. It has a sufficiently large and diverse sample size, and simple random selection of respondents which enhances the generalizability of the findings to the broader population. Additionally, the use of odds ratios and confidence intervals in the statistical analysis provides a robust method for assessing associations and quantifying the strength direction, and precision of the relationships observed in the study. Furthermore, the study addresses an important public health issue – adolescent sexual health. The findings have potential implications for interventions and policies to improve reproductive health outcomes.

The limitation of the study is that because of the study design, causation cannot be established. The reported associations may not imply a direct cause-and-effect relationship, and there could be other unexplored factors influencing the outcomes. Also, there is a possibility that respondents may provide answers that they perceive as socially desirable.

Conclusion

The proportion of adolescents who used condoms in this study was more than half of those who were sexually active. Adolescents' use of condoms was influenced by a variety of factors: socio-demographic, individual, family, and community-related factors. Therefore, programmes aimed at improving adolescents' condom usage in Rivers State may benefit from coordinated interventions aimed at removing barriers to use. Sexual and reproductive health programmes targeting barriers and facilitators of condom use should target multiple levels that incorporate a locally relevant understanding of the individual-, interpersonal- and structural-level barriers and facilitators to condom use among adolescents in the region.

Declarations

Ethical consideration: Ethical approval was obtained from the Research and Ethics Committee of the University of Port Harcourt with the approval number UPH/CEREMAD/REC/MM78/040. Appropriate agreement (Consent for participants 18 years and above, assent for those less than 18 years as well as consent from their parents/guardian) was sought from



participants who signed the consent form before the survey to ensure their willingness to participate in the study, and they were told that they have a right to refuse to participate or to withdraw at any time.

Authors' contributions: Conceptualisation: VIO, FA, IZ. Literature search and Data collection VIO, research assistants. Data analysis: VIO, IZ. Writing of manuscript: VIO, FA. Review of the manuscript: VIO, FA, IZ.

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