



Reasoned Action Approach to Determining Intention to Delay Sex or Use Condom among In-school Adolescents in Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author OA designed the study, performed statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author OOA participated in the design of the study, coordinated the data collection process and critical revision of the manuscript. Authors JS and KA contributed to the design of the study, the literature searches and critical revision of the manuscript. All Authors read and approved the final manuscript.

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ABSTRACT

Background: Comprehensive sex education programs are most impactful when they are evidence-based and rooted in social theories that are proven to enhance adoption of healthy behaviours. This study used the reasoned action approach to investigate the socio-cognitive predictors of intention to delay sexual intercourse and to use a condom during next sexual intercourse.

Methods: This is a cross-sectional study of 714 in-school adolescents in Ikenne Local government Area, Southwest Nigeria who were selected through a multistage sampling method. Participants completed questionnaires that measured their socio-cognitive characteristics and the intention to

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delay sex and to use a condom during next sexual intercourse. Multivariate logistic regression was performed to identify significant predictors.

Results: The predictors of primary intention to delay sex were being male, older adolescents, having positive experiential attitude, positively perceived injunctive and descriptive norms. Whereas, the predictors of secondary intention to delay sex were family size greater than five, perceived capacity and autonomy about the delay of sexual intercourse; positively perceived descriptive norm and availability of a mentor. The predictors of intention to use condom among virgins were family size ≤ 5 , perceived autonomy about condom use, positive instrumental attitude and positive perceived descriptive norm. Whereas the predictors of intention to use condoms among non-virgins participants were regular access to means of communication, perceived capacity, the teaching of sexual and reproductive health issues in school and availability of a mentor.

Conclusions: Reasoned action approach is effective in the determination of predictors of safe sex behaviours in Nigeria. It is, therefore, expedient that socio-cognitive factors especially the identified predictors should be factored into comprehensive sex education programmes for adolescents.

Keywords: In-school adolescents; intention to delay sexual intercourse; intention to use condom; Nigeria; reasoned action approach.

1. BACKGROUND

About 22% of the more than 180 million Nigerians are aged 10 to 19 years [1]. This accounts for a third of all adolescents in Africa [2]. A significant proportion of Nigerian adolescents are sexually active [2] and the proportion of sexually active adolescents is on the increase [3]. The National HIV&AIDS and Reproductive Health Survey (NARHS Plus II, 2012) revealed an increase in the proportion of adolescents who had ever had sex from 22% to 43% among girls and from 20% to 37% among boys between 2007 and 2012. The adolescents are also having sex earlier than before. The median age at first sex among the females also declined from 17 to 16 years between 2007 and 2012. The median age at first sex among female rural adolescents was 15 years as at 2012 [4]. It is also clear that young people engage in risky sexual behaviour especially multiple sexual partnerships and unprotected sexual intercourse [5-7].

Adolescents who engage in early and unsafe sexual intercourse are exposed to life-threatening and sometimes lifelong consequences, including HIV and other sexually transmitted infections (STI) [7,8]. Two out of every three premature deaths and one-third of adult disease burden have been associated with behavioural factors, including unprotected sexual intercourse that started in youth [9]. Globally, about 14 million adolescents between the ages of 15 and 19 years give birth yearly [10,11]. Nigeria has the highest adolescent fertility rate in sub-Saharan Africa with more than 900,000

adolescent births every year [12]. Adolescents and young adults are at a higher risk of sexually transmitted infections (STI) including HIV than older people. Whereas, the prevalence of HIV in Nigeria steadily declined from 3.6% to 3.4% between 2007 and 2012, the prevalence among adolescents aged 15 to 19 years rose from 1.7% to 2.9% [4]. Despite the above-stated risks and vulnerabilities, only one out of every five Nigerian adolescents uses a condom during sexual intercourse [4].

A systematic review of randomized controlled trials showed that current intervention programs are usually not effective in ensuring that adolescents delay sexual intercourse [13]. A number of reasons have been suggested for this. Most studies on adolescent sexuality focus mainly on those who are already sexually active. Besides, delay in onset of sexual activity is usually defined in terms of primary delay alone i.e. delaying sexual debut [8]. Those who had initially had sexual intercourse and for various reasons decided to postpone further sexual intercourse (secondary delay) till later (usually till after marriage) are often neglected. Hence, adolescents are classified as either being sexually active or not. This classification is quite simple. Also, many studies look at related factors in isolation, while, the importance of examining the combined effects of multiple social effects on adolescent social experiences has been well underscored [8,14]. This study aims to identify the factors that are related to primary and secondary intention to delay sexual intercourse or to use a condom at next sexual intercourse by adolescents.

It is interesting to note that only a few studies have extensively explored predictive dimensions for condom use. A few studies have identified condom use self-efficacy as a predictor of intended and actual use of the condom. Self-efficacy is an individual's assessment of his capacity to organize and execute courses of action required to attain designated behaviour [15]. The few studies in Nigeria that investigated the predictors of condom use either assessed social or cognitive factors. None of the studies assessed both together in a single population. Besides, to the best of our knowledge, no such studies exist among adolescents.

Comprehensive sex education discusses the basic issues that help teenagers make rational choices to keep them safe and healthy. The programs use a holistic strategy to provide young people with complete, medically correct, and age-appropriate sex education that helps them to protect their health, well-being, and dignity. Young people are empowered to make rational choices about their sexuality. The value of abstinence is stressed while also preparing young people for when they become sexually active. Comprehensive sex education programs are most impactful when they are evidence-based and rooted in social theories that have been proved to enhance adoption of healthy behaviours [16-18].

1.1 Conceptual Framework

The reasoned action approach (RAA) is a socio-cognitive theory of behaviour that was postulated by Fishbein and Ajzen [19]. It postulates that a particular behaviour is determined by the intention to perform the behaviour and moderated by actual control. The intention to perform a behaviour is itself determined by perceived behavioural control, attitude and perceived norm [19]. Perceived behavioural control is said to influence behaviour directly and indirectly through intention to perform the behaviour.

Perceived behavioural control, attitude and perceived norm are based on control, behavioural, and normative beliefs. Perceived behavioural control results from control beliefs and reflects the degree of control over "actual control" which consists of the perceived skills, facilitators, and barriers to the performance of the behaviour. Attitude results from behavioural beliefs which reflect a positive or negative result of the behaviour and good or bad experience of behaviour. Perceived norm results from

injunctive beliefs that reflect the expectations of relevant others (friends, parents, colleagues etc.) and from descriptive beliefs which reflect the behaviours of the relevant others [19].

RAA has been applied successfully to health, political, traffic and organizational behaviours [18,19]. The claims of the theory have also been validated by a number of meta-analyses [20-24].

Behaviour in the context of RAA is the action that is performed. In the context of our study, this is the primary or secondary postponement of sexual intercourse and use of a condom during sexual intercourse. 'Intention to perform behaviour' is the likelihood of performance of a given behaviour.

2. METHODS

2.1 Study Area and Period

The study was conducted in Ikenne Local Government Area (LGA), Southwest Nigeria, in September 2015. There were 65 duly registered secondary schools with more than 35,000 students in the LGA. All the secondary schools had junior and secondary school classes. The LGA is a suburban LGA. A junior secondary school-based cross-sectional survey was conducted. All rural adolescents who were enrolled in junior secondary school for a minimum of six months were eligible. The six months period would have enabled the adolescents to gain insight into their in-school peers' perception of sexual delay and condom use. The students whose parents did not give consent were excluded from the study.

2.2 Sampling

The minimum sample required to make the study valid (three hundred and fifty-eight) was derived using the formula for population proportion [25]. The estimated proportion (p) was taken as the proportion of sexually active female adolescents (10-19 years) in Nigeria to be 37% [11]. The assumptions of 95% confidence level (level of significance, $\alpha = 0.05$), 5% error margin and 10% non-response rate were used to determine the minimum sample size.

$$\begin{aligned}n &= p(1-p) (Z_{\alpha/d})^2 \\n &= 0.37(1-0.37) * 1.96^2 / 0.05^2 \\n &= 0.2331 * 3.8416 / 0.0025 \\n &= 358.19.\end{aligned}$$

However, 750 adolescents were recruited for the study to increase the validity of the findings.

Multistage random sampling technique was used to select study participants. Simple random sampling technique was used to select three out of ten administrative wards in the LGA by balloting. Five secondary schools were randomly selected in each of the three selected wards making a total of 15 schools. The sample size was proportionally allocated to selected schools. The lists of all students, with their ages and classes, from the selected schools were obtained. Ineligible students were removed from the lists. The sampling fraction was then calculated for each school. Systematic random sampling technique was then used to select the adolescents from the selected school. The index adolescent from each list was selected using simple random sampling via balloting.

2.3 Data Collection and Data Management

Self-administered interviews using pre-tested questionnaires were carried under the supervision of the researchers and trained research assistants. The participants were closely supervised by the research assistants to avoid copying or interference from other students and participants. The data were entered into Microsoft Office Excel 2007 and transferred to SPSS 21.0 for windows for statistical analysis. Data cleaning and exploration was done to examine the general features of the data. Data were presented using tables as shown below. One stepped multivariate logistic regression was used to determine the predictors of intention to delay sexual intercourse or use condom. The variables that were significant (at $p=0.05$) were identified as predictors. All questionnaires and entered data were kept securely by the lead investigator. Access was restricted. Name and addresses of participants were not required in the study.

2.4 Measurement

In the context of this study, the intention to delay sex or use condom was our outcome variable and it represents the intention to delay sexual intercourse (1⁰ and 2⁰) and use of the condom during next sexual intercourse. This was assessed by asking respondent to answer "Yes" or "No" to the questions; "I intend to delay till I am older to have sexual intercourse (again)" and "I intend to use condom when next I have sex".

The various determinants of intention to perform were the independent variables. Perceived behavioural control has two domains; capacity

and autonomy. Capacity is the belief that one is capable of performing behaviour while autonomy is the perceived extent to which one has control over the performance of the behaviour. Capacity is synonymous with Bandura's self-efficacy [15]. Capacity was assessed by the statements "I am confident that I can delay having sex till I am older" and "I am confident that I will use a condom every time I have sex". Autonomy was assessed by the statement "My delaying to have sex till I am older is totally within my control." and "My use of condom every time I have sex in the future is totally within my control". Alpha value 0.83 indicated the internal consistency of this scale.

Attitude is defined as a latent disposition to respond with some measure of positivity or otherwise to a psychological stimulus. Attitude has two aspects. The first, instrumental aspect is the anticipated consequence either positive or negative. This was assessed by the statements "It makes sense for young people to delay having sex till they are older" and "It makes sense to use a condom when having sex". The second, experiential aspect is the perceived experience either positive or negative. This was assessed by the statement "Delaying sex till they are older is pleasant for young people" and "Use of a condom during sex is pleasant for young people". Alpha value 0.77 indicated the internal consistency of this scale.

Perceived norm is the individual's perception of the peer pressure in support or against the performance of behaviour. This also has two domains. Injunctive norm is the perception of what others thought about what ought or ought not to be done. This was assessed by "My friends believe that young people should delay sex till they are older" and "My friends believe that young should use a condom if they are having sex". The second domain, the descriptive norm is the perception of what others do or fail to do about the behaviour. It was assessed by the statements "My friends are likely delaying to have sex till they are older" and "My friends are likely to be using condoms if they have sex". Alpha value 0.78 indicated the internal consistency of this scale.

'Actual control' comprises of the relevant, skills, facilitators and barriers to the delay of sexual intercourse and condom use. In this study, actual control included the assessment of basic knowledge about fertility, STI, and HIV; socio-cultural barriers discussion of reproductive health

(RH) issues and condom use, accessibility of condom, the teaching of RH topics in schools and availability of mentors. These factors have been identified by earlier studies [3,4,26]. The options that were more desirable in each of these domains were given a score of '1' while the less desirable options were scored '0'. Fifty percent of the maximum score for each domain was used as the cut-off to classify respondents into two on the basis of having relevant skills or experiencing the facilitator and barriers to performance of a behaviour.

2.5 Ethical Consideration and Consent to Participate

Ethical approval was obtained from the Babcock University Human Research Ethics Committee (BUHREC/107/15). Permission was obtained from the zonal education office of the Ministry of Education. The objectives and process of the study were explained to the participants. They were free to decline or withdraw their participation at any stage during the study. The participants were able to ask questions which were answered accordingly after questionnaire administration. Signed consents were obtained from the guardians of selected students and the Principals of the respective schools. Verbal consents were obtained from the participants.

3. RESULTS

3.1 Participants' Characteristics

A total of 714 appropriately filled questionnaires were returned, giving a response rate of 95.2%. Participants' ages ranged between 10 and 17 years with a mean age of 12.75 (\pm 1.60) years. Majority (81.4%) of them were young adolescents (10-14 years) while 18.6% were older adolescents (15-19 years). Girls constituted 52.4% (374) while boys constituted 47.6% (340) of participants. All the participants were single and never married. Christianity (80.5%) and Yoruba (77.7%) were the main religion and ethnic group. About two-thirds (66.5%) of the participants currently reside with both parents while 12.6% and 10.6% live with their mothers and fathers only respectively. The remaining 10.3% live with their grandparents or other relatives. Slightly more than half (53.5%) of the participants have regular access to a telephone while 34.9% of them have regular access to the internet. Four hundred and nineteen (58.7%) participants have regular access to at least one of either a telephone or the internet.

More than a quarter (25.2%) of the participants had engaged in sexual intercourse. The number of lifetime sexual partners ranged from 1 to 6 with a mean of 1.42 ± 0.78 . The mean number of sexual partners for the boys was 1.50 ± 0.885 while that of the girls was 1.27 ± 0.542 ($t = 1.890$, $p = 0.060$). Ninety-two participants (12.9%) including 63 (18.5%) boys and 29 (7.8%) girls reported having had anal sex ($\chi^2=18.422$, $p<0.001$). Majority of them engaged in anal sex in order to avoid unwanted pregnancy. The age at first sexual intercourse ranged from 7 to 15 years with a mean of 12.65 ± 1.31 years among participants who have had sexual intercourse. The median ages of first sexual intercourse for both males and females were 13 years each. Almost two-thirds (65.0%) of participants who have ever had sex reported that the first sexual experience was consensual; while 14.4% and 20.6% reported that they were raped and tricked respectively.

Table 1 shows the relationship between participants' characteristics and the experience of sexual intercourse. Having had sexual intercourse is associated with sex, age, religion and regular access to means of communication ($p < 0.05$). Being male (OR=2.354), being an older adolescent (OR=1.764) and practice of a religion apart from Christianity (OR=1.698) were associated with greater odds of having previously had sexual intercourse. Whereas, not having regular access to a means of communication (0.596) was associated with reduced odds of having previously had a sexual experience. Ethnicity, living arrangement, and family size were not associated with the experience of previous sexual intercourse.

3.2 Intention to Delay Sex or Use a Condom

Four hundred and ten (76.8%) participants reported that they intended to delay sex primarily while 144 (80.0%) would delay sex secondarily. The difference between primary and secondary sexual delay was not statistically significant ($\chi^2=0.803$, $p=0.370$). Four hundred and eighteen (58.5%) out of all the participants reported that they will use a condom whenever next they have sexual intercourse.

High proportions of participants' perceived that they had control over their intention to delay sex or use condom. Almost 90% of them perceived that they had the capacity (88.9%) and the autonomy (88.8%) to delay sex or use condom. Participants' had a positive attitude towards

delaying sex and condom use. About 85.2% of them anticipated positive consequences with delaying sex or using the condom (instrumental attitude); while 87.0% perceived that delaying sex or condom use will be a positive experience (experiential attitude). Participants also perceived that peer pressure was in support of sexual delay and condom use. About 9 out of every 10 participants (87.5%) perceived that their social network believed in delaying sex or condom use (injunctive norm). Whereas, 86.8% of them believed that their friends were delaying sex or would use condoms (descriptive norm).

Most of the participants were knowledgeable about HIV (73.5%) while only 31.0% and 49.6% were knowledgeable about fertility and sexually transmitted infections respectively. About 60.2% of participants perceived that culture was not a barrier to discussion of RH issues while 56.6% believed that the society permitted early sex and non-use of condoms. According to 64.0% of participants, RH topics are taught in school while 55.9% of them reported that condoms were accessible and affordable. About two-thirds of the participants (66.8%) reported knowing someone who they believe delayed sex till marriage.

3.3 Factors Related to Intention to Delay Sex

Table 2 shows the result of bivariate analysis of participants' (and RAA generated) factors and their intention to delay sex both primarily and secondarily. Primary intention to delay sex was associated with sex ($p < 0.05$) but not with age, family size and regular access to means of communication ($p > 0.05$). Secondary intention to delay sex was associated with family size and regular access to a means of communication ($p < 0.05$) but not with age and sex ($p > 0.05$).

Perceived behavioural control (capacity and autonomy), attitude (instrumental and experiential aspects) and perceived norms (injunctive and descriptive) were associated with intention to delay sex primarily ($p < 0.05$). Actual control was largely related to intention to primarily delay sex as five out the eight domains tested showed statistical significance ($p < 0.05$).

Perceived behavioural control (capacity and autonomy), experiential aspect of attitude and perceived norms (injunctive and descriptive) were associated with intention to delay sex secondarily ($p < 0.05$). Actual control was also largely related to secondary intention to secondarily delay sex as four of the five that

were significant for the primary sexual delay were also statistically significant ($p < 0.05$).

However, when the factors were subjected to multivariate logistic regression (Table 3), the predictors of primary and secondary sexual delay varied significantly. Participants who were males ($OR = 2.569$, $p = 0.001$), older adolescents ($OR = 2.397$, $p = 0.019$), with good experiential attitude ($OR = 3.749$, $p < 0.001$), and with good perceived injunctive ($OR = 2.979$, $p < 0.001$) and descriptive ($OR = 2.021$, $p = 0.008$) norms were more likely to intend to delay sex primarily than those who were not. Whereas the predictors of secondary intention to delay sex were family size greater than five ($OR = 4.744$, $p = 0.017$), perceived capacity ($OR = 10.840$, $p < 0.001$) and autonomy ($OR = 10.475$, $p = 0.004$) about sexual delay, good perceived descriptive norm ($OR = 4.442$, $p = 0.033$) and availability of a mentor ($OR = 12.044$, $p < 0.001$).

3.4 Factors Related to Intention to Use Condom

Table 4 shows the result of bivariate analysis of some participant (and RAA generated) factors and their intention to use a condom during the next sexual intercourse. Among sexually inexperienced participants, intention to use the condom was associated with sex ($p < 0.05$) while among sexually experienced participants, it was associated with sex and family size ($p < 0.05$).

Perceived behavioural control (capacity and autonomy), attitude (instrumental and experiential aspects) and perceived norms (injunctive and descriptive) were associated with intention to use condom among both sexually experienced and inexperienced participants ($p < 0.05$). Actual control was largely related to intention to use condom among sexually inexperienced participants as six out the eight domains tested showed statistical significance ($p < 0.05$). Three of these six domains were also found to be significantly associated with intention to use condom among the sexually experienced participants ($p < 0.05$).

Table 5 shows the result of subjecting the variables to multivariate logistic regression. The predictors of intention to use the condom also varied between sexually experienced and inexperienced participants. Sexually inexperienced participants with family size ≤ 5 ($OR = 1.545$, $p = 0.046$), with perceived autonomy about condom use ($OR = 1.926$, $p = 0.013$), with positive instrumental attitude ($OR = 3.072$,

$p < 0.001$) and those with good perceived descriptive norm ($OR = 4.912$, $p < 0.001$) were more likely to intend to use the condom. Whereas the predictors of intention to use condom among sexually experienced participants were regular access to means of communication ($OR = 5.953$, $p = 0.004$), perceived capacity ($OR = 35.792$, $p < 0.001$), the teaching of SRH issues in school ($OR = 6.178$, $p = 0.002$) and availability of mentor ($OR = 3.497$, $p = 0.034$).

4. DISCUSSION

The current study examined the predictors of intention to delay sexual intercourse and intention to use condoms during next sexual intercourse among both sexually experienced and sexually inexperienced adolescents in an LGA in Nigeria using the reasoned action approach (RAA). This study shows that about a quarter of the adolescents were sexually active with the median age of first sexual intercourse being 13 years for both male and female. Two-thirds of the first sexual experiences were consensual. They were engaged in high-risk sexual behaviours. The mean number of lifetime sexual partner was higher than one and more than 10% of the adolescents had engaged in anal sex. Rape was also responsible for 14.4% of the first sexual experience. Almost all the RAA derived factors were found to be associated ($p < 0.05$) with the intention to delay sex and intention to use a condom among both groups of adolescents. In essence, perceived behavioural control, attitude, perceived behavioural norm, and actual control were related to intentions to delay sexual intercourse and to use a condom during next sexual intercourse. The predictors of intention to delay sex and intention to use the condom differed between sexually experienced and sexually inexperienced adolescents.

The study sample is typical of the Nigerian adolescent population which is sexually active with prevalence of high-risk sexual behaviour which puts them at risk of early births, life-threatening morbidities some with lifelong consequences and even mortalities [4-12].

The association between RAA derived factors and the outcome variables coupled with the identified predictors give support to RAA as a means of understanding the intention to delay sexual intercourse and the intention to use a condom during the next sexual intercourse among sexually experienced and sexually inexperienced adolescents in Nigeria. These findings were similar to those in studies

conducted in Uganda, Europe, and America. [21,22,27,28]. This further underscores the effectiveness of RAA in the direct prediction of intention to perform behaviour and indirectly the performance of behaviour in different geographical and social contexts; from sub-Saharan Africa to Europe and America; and indeed even among rural adolescents.

In the current study, the predictors of intention to delay sexual intercourse among sexually experienced and sexually inexperienced adolescent were both socio-cognitive and socio-demographic. Similar findings were reported in Uganda, where the predictors of intention to delay sex intercourse among adolescents were found to be similar among virgins and non-virgins. Attitude, perceived social norms and self-efficacy (capacity) were found to be significant predictors [28]. The current study shows similar findings but the predictors differ between the sexually experienced and sexually inexperienced adolescents. While attitude (experiential) and perceived behavioural norms (injunctive and descriptive) predicted primary sexual delay, sexual delay among the sexually experienced adolescents was predicted by perceived behavioural control (capacity and autonomy) and descriptive norm. In addition, males and older adolescents were found to be more likely to delay sexual intercourse primarily while family size greater than five predicted sexual delay among sexually experienced adolescents. Age was found to predict sexual delay among east African adolescents [28].

The predictors of intention to use a condom during the next sexual intercourse among rural Nigerian adolescent were also both socio-cognitive and socio-demographic. While it was predicted by autonomy, instrumental attitude and descriptive norm among sexually inexperienced adolescents, it was predicted by capacity and actual control (teaching of SRH issues in schools and availability of mentors) among sexually experienced adolescents). The predictors of intention to use a condom also differed among other groups of adolescents [21,22,27,28]. Studies have identified that among Africans, perceived behavioural norms played a more critical role in predicting intention to use a condom as opposed to Europeans and Americans among whom individual decision making plays greater roles [29-33]. Socio-demographic predictors (sex and family size) were also found by the current study. Other studies have also identified geographical and socio-economic predictors [17,21,22,28].

Table 1. Association between participants' characteristics and sexual experience

Characteristics	Sexually experienced n (%)	not sexually experienced n (%)	χ²	p value	OR (95% CI)
Sex					
Female	66 (17.6)	308 (82.4)	23.827	0.000*	2.354 (1.662-3.335)
Male	114 (33.5)	226 (66.5)			
Age					
Young adolescents (10-14 years)	134 (23.1)	447 (76.9)	7.621	0.006*	1.764 (1.175-2.647)
Older adolescents (15-19 years)	46 (34.6)	87 (65.4)			
Religion					
Christianity	133 (23.1)	442 (76.9)	6.775	0.009*	1.698 (1.137-2.536)
Others	47 (33.8)	92 (66.2)			
Ethnicity					
Yoruba	137 (24.8)	416 (75.2)	0.247	0.619	1.107 (0.742-1.649)
Others	43 (26.7)	118 (73.3)			
Present living arrangement					
Both parents	121 (25.5)	353 (74.5)	0.075	0.784	0.951 (0.664-1.362)
Others	59 (24.6)	181 (75.4)			
Family size					
Five or less	71 (24.6)	218 (75.4)	0.106	0.744	1.059 (0.750-1.496)
More than five	109 (25.6)	316 (74.4)			
Regular access to communication means					
Yes	122 (29.1)	297 (70.9)	8.210	0.004*	0.596 (0.417-0.851)
No	58 (19.7)	237 (80.3)			

* Statistically significant at $p < 0.05$

Table 2. Association between participants' characteristics and intention to delay sex

Variables	Not sexually experienced			Sexually experienced		
	Intend to delay sex (1 ⁰)	No intention to delay (1 ⁰)	χ^2 (p)	Intend to delay sex (2 ⁰)	No intention to delay(2 ⁰)	χ^2 (p)
Sex						
Female	219 (71.1%)	89 (28.9%)	13.147 (0.000)*	53 (80.3%)	13 (19.7%)	0.006 (0.938)
Male	191 (84.5%)	35 (15.5%)		91 (79.8%)	23 (20.2%)	
Age						
10-14 years	337 (75.4%)	110 (24.6%)	2.963 (0.085)	106 (79.1%)	28 (20.9%)	0.263 (0.608)
15-19 years	73 (83.9%)	14 (16.1%)		38 (82.6%)	8 (17.4%)	
Family size						
Five or less	173 (79.4%)	45 (20.6%)	1.374 (0.241)	51 (71.8%)	20 (28.2%)	4.890 (0.027)*
More than five	237 (75.0%)	79 (25.0%)		93 (85.3%)	16 (14.7%)	
Regular access to communication means						
Yes	235 (79.1%)	62 (20.9%)	2.065 (0.151)	106 (86.9%)	16 (13.1%)	11.218 (0.001)*
No	175 (73.8%)	62 (26.2%)		38 (65.5%)	20 (34.5%)	
Perceived behavioural control						
Capacity	335 (81.5%)	76 (18.5%)	23.386 (0.000)*	115 (91.3%)	11 (8.7%)	33.340 (0.000)*
Autonomy	318 (83.7%)	62 (16.3%)	35.240 (0.000)*	124 (88.6%)	16 (11.4%)	33.340 (0.000)*
Attitude						
instrumental aspect	331 (82.5%)	70 (17.5%)	30.009 (0.000)*	100 (82.6%)	21 (17.4%)	1.614 (0.204)
experiential aspect	347 (85.9)	57 (14.1%)	30.009 (0.000)*	121 (84.0%)	23 (16.0%)	7.300 (0.007)*
Perceived norm						
injunctive norm	333 (84.9%)	59 (15.1%)	56.189 (0.000)*	106 (84.1%)	20 (15.9%)	4.471 (0.034)*
descriptive norm	316 (83.4%)	63 (16.6%)	31.885 (0.000)*	110 (86.6%)	17 (13.4%)	11.793 (0.001)*
Actual control						
knowledgeable about fertility	135 (78.9%)	36 (21.1%)	0.663 (0.415)	41 (82.0%)	9 (18.0%)	0.173 (0.677)
knowledgeable about STI	220 (81.8%)	49 (18.2%)	7.617 (0.006)*	73 (85.9%)	12 (14.1%)	3.483 (0.062)
Knowledgeable about HIV	332 (78.7%)	87 (21.3%)	3.725 (0.054)	96 (82.8%)	20 (17.2%)	1.552 (0.213)
Culture is not a barrier to discussion of RH issues and condom use	255 (80.4%)	62 (19.6%)	5.869 (0.015)*	99 (87.6%)	14 (12.4%)	10.990 (0.001)*
Societal non-support of early sexual intercourse	174 (75.3%)	57 (24.7%)	0.483 (0.487)	59 (74.7%)	20 (25.3%)	2.487 (0.115)
Teaching of SRH issues in schools	270 (79.4%)	70 (20.6%)	3.638 (0.056)*	103 (88.0%)	14 (12.0%)	13.486 (0.000)*
Accessibility and affordability of condoms	220 (81.3%)	53 (18.7%)	6.817 (0.009)*	101 (87.1%)	15 (12.9%)	10.189 (0.001)*
Availability of mentors	287 (79.9%)	72 (20.1%)	6.156 (0.013)*	109 (91.5%)	10 (8.5%)	28.442 (0.000)*

* Statistically significant at $p < 0.05$

Table 3. Predictors of intention to delay sex

Variables	1 ^o sexual delay			2 ^o sexual delay		
	Coefficient β	p value	Odds ratio	Coefficient β	p value	Odds ratio
Sex						
Female	0.944	0.001*	2.569(1.504-4.391)	0.764	0.224	2.146 (0.627-7.344)
Male						
Age						
10-14 years	0.874	0.019*	2.397 (1.153-4.982)	-0.218	0.767	0.804 (0.191-3.393)
15-19 years						
Family size						
Five or less						
More than five	0.189	0.454	1.208 (0.736-1.982)	1.557	0.017*	4.744 (1.325-16.988)
Regular access to communication means						
Yes						
No	0.102	0.682	1.108 (0.679-1.806)	-0.302	0.658	0.739 (0.194-2.815)
Perceived behavioural control						
Capacity	-0.413	0.218	1.562 (0.808-3.018)	2.383	0.000*	10.840 (3.101-37.891)
Autonomy	-0.403	0.144	0.664 (0.387-1.139)	2.349	0.004*	10.475 (2.129-51.549)
Attitude						
instrumental aspect	0.587	0.05	0.569 (0.316-1.025)	-0.52	0.45	0.594 (0.154-2.291)
experiential aspect	1.321	0.000*	3.749 (2.202-6.382)	-1.32	0.183	0.267 (0.038-1.862)
Perceived norm						
injunctive norm	1.092	0.000*	2.979 (1.666-5.326)	0.222	0.755	1.248 (0.310-5.026)
descriptive norm	0.704	0.008*	2.021 (1.199-3.407)	1.397	0.033*	4.442 (1.121-14.574)
Actual control						
knowledge of fertility	-0.034	0.901	0.982 (0.572-1.685)	0.165	0.807	1.180 (0.313-4.442)
knowledge of STI	-0.257	0.31	(0.800 (0.484-1.322)	0.295	0.655	1.343 (0.368-4.895)
Knowledge of HIV	-0.176	0.533	0.790 (0.455-1.372)	-0.017	0.98	0.984 (0.276-3.506)
Cultural barrier to discussion of RH issues and condom use	-0.049	0.86	0.959 (0.558-1.647)	0.462	0.45	1.587 (0.479-5,255)
Societal support of early sexual intercourse	0.287	0.29	(1.325 (0.777-2.258)	-0.87	0.206	0.419 (0.109-1.611)
Teaching of SRH issues in schools	0.12	0.675	1.141 (0.649-2.006)	-0.016	0.982	0.984 (0.247-3.924)
Accessibility and affordability of condoms	-0.07	0.797	0.922 (0.542-1.568)	0.746	0.297	2.108 (0.520-8.553)
Availability of mentors	-0.176	0.533	0.834 (0.480-1.450)	2.489	0.000*	12.044 (3.026-47.932)

* Statistically significant at $p < 0.05$

Table 4. Association between participants' characteristics and intention to use condom

Variables	Not sexually experienced			Sexually experienced		
	Intend to use condom	no intention to use condom	χ^2 (p)	Intend to use condom	no intention to use condom	χ^2 (p)
Sex						
Female	155 (50.3%)	153 (49.7%)	10.134 (0.001)*	33 (50.0%)	33 (50.0%)	11.167 (0.001)*
Male	145 (64.2%)	81 (35.8%)		85 (74.6%)	29 (25.4%)	
Age						
10-14 years	252 (56.4%)	195 (43.6%)	0.043 (0.836)	91 (67.9%)	43 (32.1%)	1.288 (0.256)
15-19 years	48 (55.2%)	39 (44.8%)		27 (58.7%)	19 (41.3%)	
Family size						
Five or less	132 (60.6%)	86 (39.4%)	2.859 (0.091)	40 (56.3%)	31 (43.7%)	4.412 (0.036)*
More than five	168 (53.2%)	148 (46.8%)		78 (71.6%)	31 (28.4%)	
Regular access to communication means						
Yes	178 (59.9%)	119 (40.1%)	3.828 (0.050)	84 (68.8%)	38 (31.1%)	1.823 (0.177)
No	122 (51.5%)	115 (48.5%)		34 (58.6%)	24 (41.4%)	
Perceived behavioral control						
Capacity	237 (66.8%)	118 (33.2%)	48.161 (0.000)*	108 (83.7%)	21 (16.3%)	66.535 (0.000)*
Autonomy	227 (59.9%)	152 (40.1%)	7.319 (0.007)*	91 (73.4%)	33 (26.6%)	10.826 (0.000)*
Attitude						
instrumental aspect	232 (70.1%)	99 (29.9%)	68.443 (0.000)*	97 (74.6%)	33 (25.4%)	17.012 (0.000)*
experiential aspect	234 (65.7%)	122 (34.3%)	39.571 (0.000)*	96 (75.0%)	32 (25.0%)	17.503 (0.000)*
Perceived norm						
injunctive norm	244 (65.9%)	126 (34.1%)	46.676 (0.000)*	93 (75.6%)	30 (24.4%)	17.389 (0.000)*
descriptive norm	237 (74.1%)	83 (25.9%)	103.727 (0.000)*	102 (79.1%)	27 (20.9%)	36.825 (0.000)*
Actual control						
knowledgeable about fertility	102 (59.6%)	69 (40.4%)	1.230 (0.267)	30 (60.0%)	20 (40.0%)	0.946 (0.331)
knowledgeable about STI	163 (60.6%)	106 (39.4%)	4.292 (0.038)*	57 (67.1%)	28 (32.9%)	0.161 (0.688)
Knowledgeable about HIV	236 (57.7%)	173 (42.3%)	1.644 (0.200)	78 (67.2%)	38 (32.8%)	0.411 (0.522)
Culture is not a barrier to discussion of RH issues and condom use	196 (61.8%)	121 (38.2%)	10.115 (0.001)*	84 (74.3%)	29 (25.7%)	10.366 (0.001)*
Societal support for condom use	109 (47.2%)	122 (52.8%)	13.376 (0.000)*	46 (58.2%)	33 (41.8%)	3.348 (0.067)
Teaching of SRH issues in schools	213 (62.6%)	127 (37.4%)	15.900 (0.000)*	87 (74.4%)	30 (25.6%)	11.473 (0.001)*
Accessibility and affordability of condoms	187 (66.1%)	96 (33.9%)	23.960 (0.000)*	83 (71.6%)	33 (28.4%)	5.196 (0.023)*
Availability of mentors	221 (61.6%)	138 (38.4%)	12.880 (0.000)*	80 (67.8%)	38 (32.2%)	0.762 (0.383)

* Statistically significant at $p < 0.05$

Table 5. Predictors of intention to use condom

Variables	Not sexually experienced			Sexually experienced		
	Coefficient β	p value	Odds ratio	Coefficient β	p value	Odds ratio
Sex						
Female	0.268	0.226	1.308 (0.847-2.018)	0.967	0.071	2.630 (0.920-7.520)
Male						
Age						
10-14 years	0.075	0.799	1.077 (0.607-1.913)	-0.971	0.111	0.379 (0.115-1.250)
15-19 years						
Family size						
Five or less	0.435	0.046*	1.545 (1.008-2.367)	0.299	0.58	1.349 (0.467-3.897)
More than five						
Regular access to communication means						
Yes	0.328	0.125	1.389 (0.912-2.114)	1.784	0.004*	5.953 (1.748-20.279)
No						
Perceived behavioral control						
Capacity	0.407	0.121	1.502 (0.898-2.513)	3.578	0.000*	35.792 (9.957-128.654)
Autonomy	0.656	0.013*	1.926 (1.147-3.234)	-0.757	0.238	0.469 (0.134-1.648)
Attitude						
instrumental aspect	1.122	0.000*	3.072 (1.875-5.035)	-0.657	0.315	0.518 (0.144-1.866)
experiential aspect	-0.119	0.669	0.888 (0.515-1.531)	1.052	0.11	2.863 (0.787-10.406)
Perceived norm						
injunctive norm	0.089	0.75	1.093 (0.632-1.892)	0.007	0.992	1.007 (0.247-4.099)
descriptive norm	1.592	0.000*	4.912 (3.024-7.979)	1.836	0.012	6.282 (1.506-26.204)
Actual control						
knowledge of fertility	-0.311	0.184	0.733 (0.464-1.159)	-0.173	0.778	0.841 (0.254-2.791)
knowledge of STI	-0.219	0.321	0.803 (0.522-1.237)	0.078	0.887	1.081 (0.404-2.896)
Knowledge of HIV	-0.226	0.371	0.797 (0.486-1.309)	0.144	0.789	1.154 (0.403-3.308)
Cultural barrier to discussion of RH issues and condom use	0.078	0.735	1.082 (0.687-1.702)	-0.448	0.475	0.639 (0.186-2.188)
Societal support for condom use	-0.175	0.437	0.839 (0.539-1.306)	-0.308	0.607	0.735 (0.227-2.378)
Teaching of SRH issues in schools	-0.259	0.282	0.771 (0.481-1.237)	1.821	0.002*	6.178 (1.957-19.503)
Accessibility and affordability of condoms	-0.282	0.215	0.754 (0.483-1.178)	0.888	0.15	2.431 (0.726-8.145)
Availability of mentors	-0.327	0.173	0.721 (0.450-1.154)	1.252	0.034*	3.497 (1.100-11.114)

* Statistically significant at $p < 0.05$

It has been noted that many of the current interventions are directed at only sexually experienced adolescents; and delay of sexual intercourse is seen solely in the context of primary delay alone [8,13]. The difference between the predictors of intention to delay sexual intercourse and intention to use a condom during the next sexual intercourse among sexually inexperienced and the sexually experienced adolescents may offer some explanation for the apparent ineffectiveness of the current intervention programmes. These interventions may have failed to recognize that the predictors vary between the two groups.

This has implications for the facilitation of comprehensive sex education programmes particularly for rural in-school adolescents in Nigeria and for adolescents in sub-Saharan Africa in general. Predictors of the intention to delay sex and use condom differ between sexual experienced and inexperienced adolescents. Therefore, the approach or content of the sex education programmes should be varied to emphasize issues around the predictive factors among the specific groups. This should address perceived behavioural control, attitude, perceived behavioural norms and actual control especially the availability of mentors and peer role models. It is suggested that comprehensive sex education programmes should be initiated early before the adolescents start having sex because of the increased likelihood of sexual activity with age because it is easier to correct socio-cognitive factors and to promote safer sex among sexually inexperienced youth than among those who are sexually experienced [34].

The effectiveness of comprehensive sex education programmes is better assured when they are evidence and theory based. The templates for such interventions should be context-specific and be the product of a deliberate assessment of socio-cognitive, environmental, demographic, economic and other relevant factors. Such templates should be subjected to pilot studies and scaled up after incorporating the lessons learned.

5. STRENGTHS AND LIMITATIONS OF THE STUDY

The importance of examining the combined effects of multiple social effects on adolescent

social experiences has been well underscored [8,14]. The current study is one of a few to assess socio-demographic and socio-cognitive predictors of intention to delay sexual intercourse and intention to use condom among adolescents in sub-Saharan Africa. It is also one of the very few to examine the related factors among sexually experienced and sexually inexperienced adolescents separately. We are not aware of any such study among rural adolescents in Nigeria. It will no doubt fill some gap in the knowledge of adolescent sexuality. It will shed further light on the development of interventions to address adolescent sexual and reproductive health issues.

However, the findings should be interpreted in the light of the following limitations. Firstly, the study was cross-sectional in design; therefore, causality could not be established. Secondly, the use of self-reported data is prone to bias that could affect the reliability and validity of the findings. There could be self-presentation. Thirdly, data collection was effected in the classrooms and as such privacy was not always guaranteed. The research assistants were however trained to promote privacy as much as possible. Fourthly, the study assessed socio-cognitive and some socio-demographic factors among rural adolescents although, other factors like the environmental, socio-economic have been found suggested by other studies [22]. The current study was unable to assess the effect of economic status because the majority of the respondents at pre-test did not respond to the questions. The few responses were incoherent. It is possible that adolescents are not able to accurately assess the economic status of their families. Lastly, the use of single or two item constructs to assess some socio-cognitive variables might be regarded as a limitation but it has been suggested that the critical factor is the correctness with which item(s) measure a construct and not necessarily the number of item(s) [35]. However the constructs were found to be valid.

6. CONCLUSION

This study improves the understanding of socio-cognitive and some socio-demographic predictors of intention to delay sexual intercourse and intention to use condoms among rural Nigerian in-school adolescent with or

without prior sexual experience. RAA is effective in the determination of predictors of safe sex behaviours in the Nigerian setting. It is, therefore, expedient that socio-cognitive factors especially the identified predictors should be factored into comprehensive sex education programmes for adolescents. It is also essential to take cognisance of the fact that sexually active and sexually naive adolescents have different needs. These programmes should also consider demographic, environmental and economic factors which have been highlighted by this and other studies [28].

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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