

# Sexual and Reproductive Health Knowledge and Service Utilization among In-school Rural Adolescents in Nigeria

Olumide Abiodun<sup>1\*</sup>, Oluwatosin Olu-Abiodun<sup>2</sup>, Franklin Ani<sup>1</sup> and Obafemi Sotunsa<sup>1</sup>

<sup>1</sup>Babcock University, Ilishan, Nigeria

<sup>2</sup>The School of Nursing, Ijebu-Ode, Nigeria

## Abstract

**Introduction:** Very minimal efforts have been made, especially in rural settings to address adolescent sexual and reproductive health concerns, or to provide the required sexual and reproductive health services. The Study of adolescents' knowledge, services utilization, and associated factors is pertinent to the design of appropriate program interventions.

**Materials and methods:** A junior secondary school-based cross-sectional study of 714 eligible Nigerian adolescents interviewed with the use of self-administered questionnaires. Univariate, bivariate, and multivariate logistic regression analyses were conducted.

**Results:** About half of the respondents were knowledgeable about sexually transmitted infections while 31% were knowledgeable about fertility issues. The overall mean score for sexual and reproductive knowledge was 28.08±9.70 (out of a maximum of 48). The predictors of being knowledgeable were being male (AOR=3.048, p=0.028), and having regular access to a telephone (AOR=1.487, p=0.029) and the internet (AOR=1.554, p=0.022). Almost two-thirds, (64.7%), of the respondents, had ever heard about sexual and reproductive health services while 51.0% had ever used the services. Schools were the main sources of information (29.7%). The predictors of service utilization were knowledge, regular access to telephone and parent-adolescent communication (p<0.001).

**Conclusion:** Sexual and reproductive health knowledge of in-school rural adolescents in Nigeria is fair but some misconceptions still exist. Service utilization, however, remains low largely due to lack of awareness. It is, therefore, important to design interventions that increase awareness of sexual and reproductive health issues; correct existing misconceptions, and to showcase and increase available RSH services using veritable tools including telephone and the internet.

**Keywords:** HIV/AIDS; Knowledge; Rural Nigeria; Service utilization; Sexual and reproductive health; In-school adolescents

## Introduction

World Health Organization identifies adolescence as the period of human growth and development that occurs post-childhood and before adulthood, from ages 10 to 19. The period has seen many changes over the past few decades, namely, the earlier onset of puberty, later marriage, urbanization, globalization, and changing sexual attitudes and behaviors [1]. Adolescents are not quite capable of understanding complex concepts, or the relationship between behaviors and consequences, or the extent of control they have or can have over health decisions making including that related to sexual and reproductive behavior. This makes them vulnerable to sexual exploitation and high-risk sexual behaviors and reproductive health problems [1,2]. Adolescents constitute about 20% of the world's population [2]. Contrary to popular beliefs, there is a significant burden of disease during the adolescence years. Indeed, nearly 35% of the global disease burdens have their roots in adolescence [3]. Today there are 1.2 billion adolescents worldwide with nearly 90% of them living in developing countries [2,4].

Over the past decade, adolescent sexual and reproductive health (ASRH) concerns have increasingly been on national agendas. This concern has largely been driven by the high burden of HIV/AIDS and other sexually transmitted infections (STI) among young people, early childbearing, and risky sexual behaviors among adolescents [5,6]. However, this concern has not frequently been transformed into action [7]. The reproductive health needs of adolescents and other youth remain poorly understood and under-served in many parts of the world [8].

Adolescent-friendly reproductive health services (AFRHS) is an appropriate and effective strategy to address sexual and reproductive health (SRH) needs of adolescents [9,10]. Despite 20% of the world population being adolescents [5], their sexual and reproductive health (SRH) needs have neither been researched nor addressed adequately [2,11]. Early and unprotected sexual activity and misconceptions about HIV/AIDS are still quite prevalent among rural adolescents [2,12].

The poor status of ASRH in Nigeria is a major cause for concern. It is estimated that 1.2% and 2.9% of young Nigerian males and females are infected with HIV [13]. According to the 2013 National Demographic and Health Survey, only a few females (2%) and male (4%) adolescents had HIV counseling and testing in the previous 12 months [14]. Nigerian adolescents now engage in sexual activities at an earlier age than in the past [15]. The proportion of young people who have had sexual intercourse before the age of 15 years is reported to be 11.9% [16]. The adolescent fertility rate per 1000 women in Nigeria is more than double of the global rate [17]. About one out of every

**\*Corresponding author:** Olumide Abiodun, Department of Community Medicine, Benjamin Carson (Snr) College of Medicine, Babcock University, Ilishan, Nigeria, Tel: +234 703 856 9725; E-mail: [olumiabiobudun@gmail.com](mailto:olumiabiobudun@gmail.com)

Received April 25, 2016; Accepted May 09, 2016; Published May 16, 2016

**Citation:** Abiodun O, Olu-Abiodun O, Ani F, Sotunsa O (2016) Sexual and Reproductive Health Knowledge and Service Utilization among In-school Rural Adolescents in Nigeria. J AIDS Clin Res 7: 576. doi:10.4172/2155-6113.1000576

**Copyright:** © 2016 Abiodun O, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

five in-school girls have ever been pregnant while 60% of all abortions in Nigeria are attributed to adolescents [18]. The Contraceptive prevalence rate among Nigerian women (15%) also falls short of the global estimate of 62% [19]. An inquiry into ASRH knowledge and service utilization is, therefore, essential.

The few recent studies in Nigeria on the knowledge, attitude and practice of reproductive health (RH) among show a wide variation between knowledge about and the level of services utilization [18,20-22]. These studies were carried out mainly in urban areas among the general population. Age and setting specific interventions are desirable to address the varied needs and contexts of adolescents' RH. The Study of adolescents' knowledge, services utilization, and associated factors is pertinent to the design of appropriate interventions and strategies in the local context [2,23,24]. This is the objective of this study.

More than 22% of Nigerians are adolescents [25]; more than half of whom dwell in rural areas [26]. However, very minimal efforts have been made especially in rural settings to address their concerns about, or provide them with the required Sexual and Reproductive Health (SRH) services.

## Materials and Methods

### Study area and period

The study was conducted in Ikenne Local Government Area (LGA), Southwest Nigeria, in September 2015. Ikenne LGA is one of the 20 LGAs in Ogun State, Nigeria. It consists of ten administrative wards namely. A ward in Nigeria is the smallest political, administrative unit in Nigeria. Ikenne LGA has an estimated population of about 33,411 adolescents based on 22.3% proportion of adolescents [25] and projected population of 149,825 for the LGA [27]. There are 65 duly registered secondary schools in the LGA. The population is rural.

### Study design and population

A secondary school-based cross-sectional study was carried out in Ikenne LGA. Ikenne LGA is a typical rural LGA in Ogun State, Nigeria. All rural adolescents who have been enrolled in junior secondary school in Ikenne LGA for a minimum of six months were eligible. Junior secondary students are usually all within the adolescent age group. 750 eligible adolescents were recruited from randomly selected.

### Sample size

The sample size was calculated using the formula for population (>10,000) proportion by taking the proportion of modern contraceptive utilization by female adolescents in Nigeria to be 3.8% [28]. The assumptions of 95% confidence level, 5% error margin, and 10% non-response rate were used to determine the sample size. Accordingly, the total sample size was 62.

### Sampling and data collection procedure

Three wards were selected by simple random sampling (via balloting) among the 10 wards in the LGA. Five secondary schools were randomly selected in each of the three selected wards making a total of 15 secondary schools. Sample sizes were proportionally allocated to each of the 15 secondary schools. Systematic random sampling technique was used to select adolescents in the age group of 10–19 years from the junior secondary sessions.

Structured self-administered interviews using pre-tested questionnaires that were prepared by reviewing previous studies [2,12,18,22,23] were carried under the guidance of the researchers

and trained research assistants. The questionnaire explored the demographic, social and economic characteristics; knowledge of RH-related topics (fertility, contraception, STIs/HIV/AIDS, HIV counseling and testing (HCT)) and patterns of RH services utilization (Questionnaire 1).

### Data quality management and analysis

A Pre-test was undertaken on 75 junior secondary school students in Sagamu LGA to examine the construct validity and reliability of the instrument. Research assistants were recruited and trained on the study objective, questionnaire content and how to ensure privacy and confidentiality. The collected data were checked for incompleteness and inconsistency and cleaned by the lead investigator.

The data were entered into Microsoft Office Excel 2007 and transferred to SPSS 16.0 for windows for analysis. Data exploration was done to examine the general features of the data. Percentages were computed to explore RH knowledge and services utilization. Data was presented using tables and graphs accordingly. One stepped logistic regression was used to determine the predictors of RH knowledge and services utilization. The variables that were significant (at  $p=0.05$ ) were identified as predictors of RH knowledge and services utilization.

All questionnaires and entered data are kept secure by the lead investigator. Access is restricted. Name and addresses of participants were not required in the study.

### Study variables

The outcome variables are reproductive health knowledge and services utilization while the independent variables consist of socio-demographic variables, socio-economic variables and reproductive characteristics.

## Definitions

### Reproductive health knowledge

The assessment of reproductive health knowledge covered a range of topics including fertility, FP, STI and HCT for HIV/AIDS and the RH services that should be accessible to adolescents in Ikenne LGA. It also included health education about RH services. An index defined by Abajobir and Seme which summarized adolescents' knowledge about RH issues that assigned a score of one (1) for each "Yes" or correct response and zero (0) for "No", "Don't know" or incorrect response was used. The respondents were characterized as 'knowledgeable' if the summary index equals to or is greater than 50% of the total score; and 'not knowledgeable' if the summary index is less than 50% of the total score [2]. Eight reproductive knowledge themes were assessed namely;

1. Sexual maturity in females: Participants were required to identify correctly if each of six items were signs of sexual maturity in females.
2. Sexual maturity in males: Participants were required to identify correctly if each of nine items were signs of sexual maturity in males.
3. Pregnancy and fertility: Four items were used to assess the knowledge of fertility issues. They were required to identify the physiologic age of maturity for pregnancy to occur; period of fertility relative to the menstrual cycle, and if a girl could get pregnant at first sexual contact.
4. Family planning: Participants were required to identify

correctly if each of nine items were ways of preventing unwanted pregnancy

5. STI: Participants were required to identify correctly if each of five items were signs of STIs. They were also asked to write a list of the STIs that they know.
6. HIV transmission: Participants were required to identify correctly if each of seven items were means of HIV transmission.
7. HIV prevention: Participants were required to identify correctly if each of eight items were means of HIV prevention.
8. HIV counseling and testing (HCT): An open-ended question "What is HIV counseling and testing" was used to access respondents' knowledge about HCT.

### Reproductive health services utilization

This was regarded as the use of any SRH service, including medical checkup, consultations, FP, health education on HIV/AIDS and treatment of STI in health care centers [2].

### Regular access to telephone and the internet

'Regular access' was regarded as daily access or access as often as required by the respondents.

### Ethical consideration

Ethical approval was obtained from the Babcock University Human Research Ethics Committee (BUHREC/107/15). Permission was obtained from the Ministry of Education. The objective of the study was explained to the respondents. They were free to decline or withdraw their participation in the study. The respondents were encouraged to ask questions which were answered accordingly after data collection. Signed consent was obtained from the guardians of the respondents and the Principals of the selected schools. Verbal consents were obtained from the respondents.

### Results

Seven hundred and fourteen questionnaires were returned, yielding a response rate of 95.2%. Table 1 presents the socio-demographic characteristics of the respondents. The ages of the respondents ranged from ten to seventeen years with a mean of 12.75±1.60 years. All of them were single, never married; predominantly Yoruba and Christians. More than half of them (53.5%) have a regular access to telephones while 34.9% have a regular access to the internet. However, 58.7% of the respondents have a regular access to either a telephone or the internet.

### Sexual and Reproductive Health Knowledge of in-school rural adolescents

About three-quarters (75.9%) of the females have attained menarche. The mean age at menarche was 11.92±1.26 years. Four hundred and fourteen of them responded that a girl could become pregnant at first sexual intercourse. The response to the age at which a girl could get pregnant was "I do not know" for 40.5% of the respondents, followed by "during puberty" (29.4%); and "after puberty" (27.5%). Concerning the most probable period for the occurrence of pregnancy relative to the menstrual cycle, only 122 (17.1%) indicated that it was at "middle of the cycle", whereas, 42.9% of them responded that they did not know. About one-third (29.4%) of the adolescents responded that males could be physically mature to get a girl pregnant "during puberty" while 40.5% gave "I do not know" as the response to

the age of physical maturity at which a boy could get a girl pregnant. The summary of knowledge about fertility and pregnancy revealed that respondents' mean score was 1.20 ± 1.02 out a maximum of 4.

This study found that 75% of the respondents could correctly identify most signs of sexual maturation in both males and females e.g., breast development, pubic hair and facial hair development, menstruation, male voice changes, body shape changes etc. However, some misconceptions still occur. About 40% of the respondents did not know that increase in testicular size, acne and body odor could accompany sexual maturation. The summary of knowledge about male and female maturity revealed that respondents' mean scores were 4.41 ± 1.47 (out a maximum of 6) and 6.38 ± 2.55 (out of a maximum of 9).

Concerning modern methods of preventing unwanted pregnancy, the methods that were identified by respondents included consistent and proper condom use (66.9%), oral contraceptive pills (47.3%), injectable contraceptives (52.1%), intra-uterine devices (41.7%), implants (42.0%), tubal ligation (53.1%), and vasectomy (47.9%). The summary of knowledge about prevention of unwanted pregnancy revealed that respondents' mean score was 4.44 ± 2.47 (out of a maximum of 9).

Five hundred and seven (71.0%) of the respondents were aware of sexually transmitted infections (STI). The proportion of respondents who knew the possible symptoms of STIs were 47.6% for "genital ulcer", 53.4% for "pain during urination", 50.1% for "pain during sexual intercourse", 43.6% for "genital discharge", and only 26.8% for "asymptomatic". The summary of the knowledge about STIs revealed that respondents' mean score was 2.21 ± 1.93 (out of a maximum of 5).

Five hundred and seventy-eight (81.0%) respondents had ever

Respondents' characteristics	Frequency (n=714)	Percent (%)
<b>Sex</b>		
Female	374	52.4
Male	340	47.6
<b>Age</b>		
10-14 years	581	81.4
15-19 years	133	18.6
<b>Marital Status</b>		
Single, never married	714	100
ever married	0	0
<b>Religion</b>		
Christianity	575	80.5
Islam	98	13.7
Others	41	5.7
<b>Ethnicity</b>		
Yoruba	553	77.5
Others	161	22.5
<b>Present living arrangement</b>		
Both parents	474	66.4
Single parent	167	23.4
Others	73	10.2
<b>Family size</b>		
Five or less	289	40.5
More than five	425	59.5
<b>Regular access to communication means</b>		
Yes	419	58.7
No	295	41.3

Table 1: Socio-demographic characteristics of respondents.

heard of HIV/AIDS. While 66.7% of them recognized that HIV/AIDS is transmitted through unprotected sexual intercourse, 66.3% recognized HIV can be got during the first sexual experience. Other means of HIV transmission are the transfusion of infected blood (70.7%), the sharing of sharps (69.6%), during pregnancy (52.7%), childbirth (52.1%) and breastfeeding (58.4%). According to the respondents, the means of avoiding HIV/AIDS were sexual abstinence (68.5%), consistent and proper condom use (63.7%), faithfulness to one uninfected partner (59.8%), avoiding transfusion with infected blood (67.1%) and avoiding the sharing of sharps (70.3%). The means of controlling the spread of the disease are the prevention of mother-to-child transmission of HIV/AIDS (66.5%), individuals' knowledge of HIV status (55.9%), and positive living among people living with HIV/AIDS (55.7%). Only 18 (2.5%) of the respondents had an accurate understanding of HIV counseling and testing. The summary of knowledge about HIV/AIDS transmission and prevention/control revealed that respondents' mean scores were  $4.33 \pm 2.64$  (out of a maximum of 7) and  $5.08 \pm 2.98$  (out of a maximum of 8) respectively.

Table 2 shows the proportion of respondents who are knowledgeable or not, about the various domains of sexual and reproductive health that were assessed. Respondents who gave correct responses in  $\geq 50\%$  of the situations were regarded as "knowledgeable" while those who scored less than 50% were regarded as "not knowledgeable". Less than 50% of the respondents were knowledgeable about STIs while about half (52.9%) were knowledgeable about avoidance of unwanted pregnancy. The overall mean score for all the domains of SRH assessed was  $28.08 \pm 9.70$  (out of a maximum of 48). About two-thirds of the adolescents were knowledgeable about sexual and reproductive health issues.

Reproductive Health themes	Frequency (n=714)	Percent
<b>Sexual maturation in females</b>		
Knowledgeable	642	89.9
Not knowledgeable	72	10.1
<b>Sexual maturation in Males</b>		
Knowledgeable	556	77.9
Not knowledgeable	158	22.1
<b>Pregnancy and Fertility</b>		
Knowledgeable	221	31.0
Not knowledgeable	493	69.0
<b>Avoiding unwanted pregnancy</b>		
Knowledgeable	378	52.9
Not knowledgeable	336	47.1
<b>Sexually Transmitted Infections</b>		
Knowledgeable	354	49.6
Not knowledgeable	360	50.4
<b>HIV/AIDS Transmission</b>		
Knowledgeable	492	68.9
Not knowledgeable	222	31.1
<b>HIV/AIDS Prevention</b>		
Knowledgeable	523	73.2
Not knowledgeable	191	26.8
<b>HIV Counseling and Testing</b>		
Knowledgeable	18	2.5
Not knowledgeable	696	97.5
<b>Overall Reproductive Health</b>		
Knowledgeable	451	63.2
Not knowledgeable	263	36.8

Table 2: Sexual and reproductive health knowledge of respondents.

### Factors related to sexual and reproductive health knowledge

Table 3 shows the result of bivariate and multivariate regression analysis of respondents' characteristics versus SRH knowledge. On multivariate regression analysis, the predictors of being knowledgeable about SRH issues were being male (AOR=3.048,  $p=0.028$ ), and having regular access to a telephone (AOR=1.487,  $p=0.029$ ) and the internet (AOR=1.554,  $p=0.022$ ). The variance inflation factors (VIF) ranged from 1.011 to 1.333 indicating the absence of multicollinearity.

### Sexual and Reproductive Health Services utilization among in-school rural adolescents

Table 4 shows the findings of the study about SRH service utilization among in-school rural adolescents in Nigeria. Almost two-thirds, 462 (64.7%), of the respondents, had ever heard about SRH services. Schools were the main sources of information (29.7%), followed by radio (24.5%) and health professionals (21.4%). Almost half (46.2%) reported the media (radio, television and print media) as their source of information about SRH information.

About half (51.0%) of the respondents had ever used SRH services while 29.7% of them had gained access to SRH services in the preceding six months. Private hospitals (43.1%) followed by government health facilities were the sites where most participants gained access to SRH services. However, a few (3.3%) patronized traditional health practitioners. The main reasons for preferring these facilities were geographical proximity (58.2%), cost (21.4%) and friendliness of health workers (16.5%). The services rendered in the facilities as reported by respondents included medical checks (73.1%), health education (60.7%), family planning (60.2%), antenatal (57.1%) and HCT services (Figure 1).

More than half of respondents (56.4%) had no preference about the sex of health professional while 36.6% preferred health professional. Lack of awareness and access to relevant information was the major barrier to SRH service utilization. Other barriers include fear of stigma, socio-cultural acceptability and lack of privacy/confidentiality.

Five hundred and ninety-two (82.9%) respondents had never discussed SRH issues with their parents because of fear (63.3%), socio-cultural taboos (19.9%), the absence of the need for such (10.1%) and other reasons. The adolescents prefer to discuss SRH issues with their friends/peers (56.3%) and health professionals (22.8%).

Only 13 (1.8%) of all the respondents were found to have adequate information about SRH issues.

### Factors related to sexual and reproductive health services utilization

Table 5 shows the result of bivariate and multivariate regression analysis of respondents' characteristics versus SRH services utilization. Sex, Age, religion, ethnicity, current living arrangement; family size, regular access to the internet, overall SRH knowledge and level of information about SRH service did not show statistically significant association with SRH service utilization. Regular access to telephone, awareness of RH services and discussion of SRH issues with parents were associated with utilization of SRH services ( $p<0.05$ ). Indeed, awareness of SRH services was a sine-qua-non for service utilization as all respondents who had ever used SRH services were aware of the services. On multivariate regression analysis, the other predictors of SRH service utilization were regular access to telephone and discussion of SRH issues with parents. Respondents with regular access to telephone were 11.158 times more likely to access SRH services than

Respondents' characteristics	Knowledgeable about SRH		$\chi^2$ (p value)	AOR (p value)
	Yes (%)	No (%)		
<b>Sex</b>				
Female	225 (60.2)	149 (39.8)	3.048 (0.081)	1.439 (0.028)*
Male	226 (66.5)	114 (33.5)		
<b>Age</b>				
10-14 years	367 (63.2)	214 (36.8)	0.000 (0.998)	0.975 (0.900)
15-19 years	84 (63.2)	49 (36.8)		
<b>Religion</b>				
Christianity	373 (64.9)	202 (35.1)	3.687 (0.055)	1.408 (0.085)
Others	78 (56.1)	61 (43.9)		
<b>Ethnicity</b>				
Yoruba	341 (61.7)	212 (38.3)	2.377 (0.123)	0.754 (0.153)
Others	110 (68.3)	51 (31.7)		
<b>Present living arrangement</b>				
Both parents	309 (65.2)	165 (34.8)	2.484 (0.115)	1.345 (0.077)
Others	142 (59.2)	98 (40.8)		
<b>Family size</b>				
Five or less	180 (62.3)	109 (37.7)	0.162 (0.687)	0.905 (0.538)
More than five	271 (63.8)	154 (36.2)		
<b>Regular access to Telephone</b>				
Yes	250 (65.4)	132 (34.6)	1.835 (0.176)	1.487 (0.029)*
No	201 (60.5)	131 (39.5)		
<b>Regular access to Internet</b>				
Yes	150 (60.2)	99 (39.8)	1.405 (0.236)	1.554 (0.022)*
No	301 (64.7)	164 (35.3)		
<b>Discussion of SRH issues with parents</b>				
Yes	81 (66.4)	41 (33.6)	0.659 (0.417)	1.200 (0.393)
No	370 (62.5)	222 (37.5)		

\*statistically significant at  $p < 0.05$ ;  $\chi^2$ =Chi-square (bivariate analysis); AOR=Adjusted Odds Ratio (Multivariate analysis); SRH=Sexual and Reproductive Health

**Table 3:** Factors related to sexual and reproductive health knowledge among respondents.

those without regular access to a telephone (0.001). Respondents who had ever discussed SRH issues with parents were 50.711 times more likely to utilize SRH services than those who had not ( $< 0.001$ ). The variance inflation factors (VIF) ranged from 1.026 to 1.365 indicating the absence of multicollinearity.

## Discussion

The huge population of the world's adolescents coupled with their increased sexual vulnerability makes ARSH issues quite topical. The current study attempts to bridge the gap in the ARSH knowledge and service utilization in rural Nigeria. This will be critical to the success of future ARSH interventions. The response rate (95.2%), despite the sensitivity of the issues addressed, was high probably because of the careful effort that was put into obtaining informed consent and the fact that both parents and the teachers were carried along at every stage of the survey.

Schools were the main sources of information about SRH although health professionals were also prominent sources of information. Studies in Ethiopia, South Africa, Tanzania and Ghana showed that health professionals were the main sources of SRH information. This disparity may be explained by the settings in which the studies were carried out. The other studies were either health facility or community-based while the current study was carried out among in-school adolescents [2,8,29,30].

Significant proportions of the rural in-school adolescents reported misconceptions about most fertility issues and a few adolescent

physiologic changes. Most respondents were knowledgeable about physiologic changes of adolescence just like was found among Indian adolescents [31]. However, only 31.0% were knowledgeable about fertility issues. This is comparable to the 29.4% of rural Chinese migrant adolescents, who were knowledgeable about fertility issues, but higher than among Ethiopian rural adolescents [2,23]. A good understanding of the physiology of reproduction and fertility is essential for a successful adolescence and practice of periodic abstinence to prevent unwanted pregnancy.

The condom and oral contraceptive pills (OCP) were the most known modern contraceptive methods. This is complemented by findings from Eastern Nigeria, Ethiopia, and Ghana. Just like other adolescents, long-lasting contraceptive methods have been relatively unknown [2,8,18,32,33].

HIV/AIDS was the most mentioned STI by the adolescents. This is expected because of the current worldwide pandemic of the disease and the concerted efforts put into creating awareness about HIV/AIDS by both government and its non-governmental partners. The proportion of respondents who were aware of HIV/AIDS was lower than the national average, but it is known that the awareness is lower in rural areas. The knowledge about transmission and prevention of HIV/AIDS was similar to what was obtained from the National Reproductive Health Survey [33]. It has also been suggested that the level of knowledge of HIV/AIDS is lower in rural areas than urban areas [2,33-35].

ARSH service utilization is low but the level is high when compared with previous studies in Nigeria and other parts of sub-Saharan Africa

Variables	Frequency	Percent
<b>Awareness of RH Services</b>		
Yes	462	64.7
No	252	35.3
<b>Source of Information</b>		
School	137	29.7
Health Professionals	99	21.4
Radio	113	24.5
Television	77	16.7
Print Media	36	5.0
<b>Ever utilized RH Services</b>		
Yes	364	51.0
No	350	49.0
<b>Utilized RH Services within last Six Months</b>		
Yes	212	29.7
No	502	70.3
<b>RH Service facility utilized (n=364)</b>		
Government health facility	137	37.6
Private hospital	157	43.1
Chemist/Pharmacies	58	15.9
Traditional health practitioners	12	3.3
<b>Reason for preferring facility</b>		
Geographic proximity	212	58.2
Cost/affordability	78	21.4
Staff friendliness	60	16.5
Others	14	3.8
<b>Preferred health professional</b>		
Same Sex	261	36.6
Opposite Sex	50	7.0
No preference	403	56.4
<b>Barriers to RH Service utilization</b>		
Do not know where to go	7	2.0
Lack of privacy/confidentiality	16	4.6
Unfriendly health workers	6	1.7
Lack of awareness/knowledge	252	72.0
Fear of stigma	50	14.3
not socially and culturally acceptable	19	5.4
<b>Ever discussed RH with Parents</b>		
Yes	122	17.1
No	592	82.9
<b>Level of RH Service Information</b>		
Well informed	13	1.8
Not well informed	701	98.2

Table 4: Sexual and reproductive health services utilization among respondents.

[36,37]. The current study investigates in-school adolescents who may be better inclined to take up these services compared to adolescents who are out of school. The low utilization rate may be due to the thinking that such services are only curative and as such those who do not have sexual or reproductive health problems would not have any reason to take up the services. Sexual and reproductive health services include preventive, curative and rehabilitative services. Adolescents prefer health facilities that have a positive perception of accessibility, cost, and privacy [37]. This may account for the preference of private hospital by the respondents for ARSH services as opposed to the preference for public clinics in Ethiopia, where public clinics are perceived to have better accessibility and confidentiality [2]. Although gender has been suggested to be a significant variable in health preference [38], most

adolescents, especially males, in the current study were indifferent about the sex of their health professional.

More than 80% of the adolescents had never discussed SRH issues with their parents. This is similar to findings from Bangladesh and Ethiopia [2,35]. Parent-adolescent communication is important because of its predictive value on SRH service utilization as found in this study and among rural Ethiopian adolescents [2]. Socio-cultural factors, like parents' level of education and knowledge, and cultural norms, about SRH issues, play a major role in preventing parent-adolescent communication about SRH issues [39]. There is need to build the capacity of parents on SRH issues and to initiate comprehensive family life programs for the adolescents and their parents/guardians.

Internal and external enhancer and barriers to SRH service utilization were identified by the current study. Internal barriers like lack of awareness, fear of stigma, loss of social status, shame and embarrassment, coupled with external barriers like geographical and economic accessibility, disrespectful providers and lack of confidentiality have also been identified in other parts of sub-Saharan Africa and beyond [37,40,41]. Lack of awareness, which is the major barrier identified by the current study and some others [37], deprives adolescents of access to available SRH services. It is, therefore, important to design interventions that increase awareness of SRH issues and available services. More facilities that provide SRH services need to be made available while providers need to improve the quality of existing services as it relates to confidentiality, cost-effectiveness, and staff friendliness.

Reproductive health knowledge was higher among male adolescents and those with regular access to a telephone and the internet. As found in China [42] and contrary to findings in Ethiopia and India [2,35], age was not a potent predictor of SRH knowledge. Adolescents from rich families have also been found to have better SRH knowledge than those from poor families. A possible explanation for this was that their socio-economic status gives them exposure to the media and other means of communication. Hence, in accordance with the current study, access to means of communication enhances SRH knowledge [31,43]. Interventions aimed at improving adolescent SRH knowledge may need to place emphasis on females and explore the use schools and parents/guardians as veritable means of passing SRH information across to adolescents.

Apart from the parent-adolescent discussion about SRH issues, SRH service utilization was also predicted by SRH knowledge and regular access to a telephone. Knowledge about contraceptives is a prerequisite to the uptake of SRH services [12,24,33]. The internet and telephones may be veritable tools for propagating SRH information and for the enhancement of uptake of available RHS services.

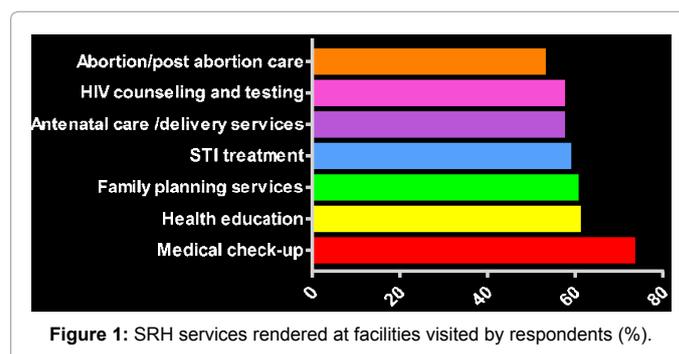


Figure 1: SRH services rendered at facilities visited by respondents (%).

Respondents' characteristics	RH Services utilization		$\chi^2$ (p value)	AOR (p value)
	Yes (%)	No (%)		
<b>Sex</b>				
Female	178 (47.6)	196 (52.4)	3.605 (0.058)	0.815 (0.213)
Male	186 (54.7)	154 (45.3)		
<b>Age</b>				
10-14 years	296 (50.9)	285 (49.1)	0.001 (0.970)	1.037 (0.858)
15-19 years	68 (51.1)	65 (48.9)		
<b>Religion</b>				
Christianity	294 (51.1)	281 (48.9)	0.027 (0.870)	1.007 (0.971)
Others	70 (50.4)	69 (49.6)		
<b>Ethnicity</b>				
Yoruba	285 (51.5)	268 (48.5)	0.304 (0.581)	0.964 (0.850)
Others	79 (49.1)	82 (50.9)		
<b>Present living arrangement</b>				
Both parents	246 (51.9)	228 (48.1)	0.476 (0.490)	1.176 (0.343)
Others	118 (49.2)	122 (50.8)		
<b>Family size</b>				
Five or less	143 (49.5)	146 (50.5)	0.437 (0.509)	0.911 (0.576)
More than five	221 (52.0)	204 (48.0)		
<b>Regular access to Telephone</b>				
Yes	217 (56.8)	165 (43.2)	11.158 (0.001)*	1.833 (0.001)*
No	147 (44.3)	185 (55.7)		
<b>Regular access to Internet</b>				
Yes	137 (55.0)	112 (45.0)	2.497 (0.114)	0.947 (0.775)
No	227 (48.8)	238 (51.2)		
<b>Overall RH knowledge</b>				
Knowledgeable	234 (51.9)	217 (48.1)	0.401 (0.527)	1.002 (0.988)
Not knowledgeable	130 (49.4)	133 (50.6)		
<b>Awareness of RH Services</b>				
Yes	364 (78.8)	98 (21.2)	405.033 (0.000)*	
No	0 (0.0)	252 (100.0)		
<b>Ever discussed RH with Parents</b>				
Yes	98 (80.3)	24 (19.7)	50.711 (0.000)*	5.407 (0.000)*
No	266 (44.9)	326 (55.1)		
<b>Level of RH Service Information</b>				
Well informed	7 (53.8)	6 (46.2)	0.044 (0.835)	1.052 (0.932)
Not well informed	357 (50.9)	344 (49.1)		

\*statistically significant at  $p < 0.05$ ;  $\chi^2$  = Chi-square (bivariate analysis); AOR = Adjusted Odds Ratio (Multivariate analysis); SRH = Sexual and Reproductive Health

**Table 5:** Factors related to sexual and reproductive health service utilization among respondents.

This study, however, had some limitations. First, the study design was cross-sectional; hence, causality could not be established. Secondly, self-reported data as used in this study has an inherent bias that could affect the reliability and validity of the study. There could be self-presentation. Thirdly, data collection was effected in the classrooms and as such privacy was not always guaranteed. The current study was unable to assess homosexuality. Homosexuality is illegal in Nigeria and the school authorities: the Guardians and participants during the pre-test were quite sensitive to the topic.

## Conclusion

The current study found that the SRH knowledge of in-school rural adolescents in Nigeria was fair but some misconceptions exist. RSH service utilization, however, remains low largely due to lack of awareness. Other internal and external barriers also exist. It is, therefore, important to design interventions that increase awareness of SRH issues; correct misconceptions about fertility, physiologic changes

of adolescence, contraception, STIs and HIV/AIDS; and to showcase available RSH services. More facilities that provide SRH services need to be made available while providers need to improve the quality of existing.

Schools were the main sources of SRH information for in-school Nigeria adolescent. Male sex, regular access to the telephone and the internet were predictors of SRH knowledge while RSH service utilization was predicted by regular access to the telephone and parent-adolescent communication about SRH issues. There is, therefore, a need to build the capacity of parents on SRH issues and to initiate comprehensive family life programs for the adolescents and their parents/guardians. Interventions aimed at improving adolescent SRH knowledge may need to place emphasis on females and explore the use schools and parents/guardians as veritable means of passing SRH information across to adolescents. The internet and telephones may also be veritable tools for propagating SRH information and for the enhancement of uptake of available RSH services.

## Implications and Contribution

Misconceptions regarding sexual and reproductive health exist among adolescents. Awareness campaigns should correct the misconceptions about fertility, adolescent physiologic changes, contraception, STIs and HIV/AIDS; and showcase available SRH services. The capacity of parents/guardians should be built with the initiation of comprehensive family life programs for the adolescents and their parents/guardians.

## Author Contributions

This research incorporated the efforts of all the both authors from inception to completion. OA and OO conceived and designed the research; OA analyzed the data and wrote the draft manuscript. FA and OS organized data collection and entry. OS contributed significantly to the review of the manuscript. All authors approved and agreed to the submission of the manuscript.

## References

1. Adolescent development (2016) WHO.
2. Abajobir A, Seme A (2014) Reproductive health knowledge and services utilization among rural adolescents in east Gojjam zone, Ethiopia: a community-based cross-sectional study. *BMC Health Services Research* 14: 138.
3. Adolescent health epidemiology (2016) WHO.
4. Progress for children; a report card on adolescents (2012) UNICEF, New York.
5. Blum R (2016) Risk and protective factors affecting adolescent reproductive health in developing countries. WHO 232.
6. Shivaram K, Nandini C, Malleshappa K (2011) Knowledge and attitude about reproductive health among rural adolescent girls in Kuppam mandal: an intervention study. *Biomed Res* 22: 305-310.
7. Health for the world's adolescents; a second chance in the second decade (2014) WHO.
8. Health Unit, Association of Church-Based Development Program (ACDEP) (2008) A baseline survey on adolescent sexual and reproductive health in the operational areas of Ten ACDEP member primary health care programmes in northern and upper east regions. Northern Region Ghana: project report.
9. Barzelatto J (2003) State of world population. United Nations Population Fund, New York.
10. Adolescent friendly health services (2002) WHO.
11. Ayalew T, Meseret Y, Yeshigeta G (2008) Reproductive health knowledge and attitude among adolescents: a community-based study in jimma town, southwest Ethiopia. *Ethiop J Health Sci* 22: 143-151.
12. Butler P (2003) The reproductive health situation of adolescents. *Progress in Reproductive Research* 21-23.
13. UNAIDS Report on the global AIDS epidemic (2010) UNAIDS Global report.
14. Nigeria Demographic and Health Survey (2013) Nigeria.
15. The children - HIV/AIDS (2012) UNICEF Nigeria.
16. Global AIDS Response Country Progress Report (2012) Nigeria.
17. Adolescent fertility rate (births per 1,000 women ages 15-19. The world Bank.
18. Adogu P, Udigwe I, Udigwe G, Nwabueze A, Onwasigwe C (2014) Pattern, Types and Predictors of Contraception among Female In-School and Out-of-School Adolescents in Onitsha, Anambra State, Nigeria. *Advances in Sexual Medicine* 4: 33-41.
19. Contraceptive prevalence, any methods (% of women ages 15-49. The world Bank.
20. Mmari K, Blum R, Sonenstein F, Marshall B, Brahmabhatt H, et al. (2014) Adolescents' perceptions of health from disadvantaged urban communities: findings from the WAVE study. *Soc Sci Med* 104: 124-132.
21. Fotso J, Ajayi J, Idoko E, Speizer I, Fasiku D, et al. (2011) Family Planning and Reproductive Health in Urban Nigeria: Levels, Trends and Differentials. Measurement, Learning & Evaluation Project and National Population Commission.
22. Ogunjuyigbe P, Adepoju A (2014) Perspectives on socio-cultural context of adolescent reproductive health behaviour in Nigeria. *APS* 27: 343.
23. Liu Z, Zhu M, Dib HH, Li Z, Shi S, et al. (2011) RH knowledge and service utilization among unmarried rural-to-urban migrants in three major cities, China. *BMC Public Health* 11: 74.
24. National reproductive health strategy 2006–2015 (2006) Federal Ministry of Health.
25. Nigeria over 167 million population: Implications and Challenges (2016) National Population Commission, Nigeria.
26. The World Factbook (2016) Central Intelligence Agency.
27. Report of Nigeria's National Population Commission on the 2006 Census (2007) Population and Development Review 33: 206-210.
28. Taofeek I (2009) Research Methodology and Dissertation Writing for Health and Allied Health Professionals. Abuja: Caress Global Link Limited.
29. Bana A, Bhat V, Godlwana X, Libazi S, Maholwana Y, et al. (2010) Knowledge, attitudes and behaviours of adolescents in relation to STIs, pregnancy, contraceptive utilization and substance abuse in the Mhlakulo region, Eastern Cape. *South African Family Practice* 52: 154-158.
30. van Eijk AM, Bles HM, Odhiambo F, Ayisi JG, Blokland IE, et al. (2006) Use of antenatal services and delivery care among women in rural western Kenya: a community based survey. *Reprod Health* 3: 2.
31. Patel S, Baxi R, Mazumdar V, Misra S, Modi E, et al. (2009) Reproductive health awareness among rural school going adolescents of Vadodara district. *Indian J Sex Transm Dis*. 30: 94.
32. ORC Macro (2005) Ethiopia demographic and health survey. Central Statistical Agency, Ethiopia and ORC macro, USA.
33. Federal Ministry of Health, Nigeria (2012) National HIV&AIDS and Reproductive Health Survey (NARHS Plus II, 2012). Abuja Nigeria.
34. Khan M (2003) Baseline survey of adolescent reproductive health interventions in Bangladesh. Dhaka: Bangladesh Center for Communication Programs.
35. Barkat A, Majid M (2003) Adolescent reproductive health in Bangladesh: Status, policies, programs and issues. POLICY Project Report.
36. Oluwole O, Cortez R, Marinda E, Saadat S (2015) Adolescent sexual and reproductive health in Nigeria. The world bank.
37. Biddlecom AE, Munthali A, Singh S, Woog V (2007) Adolescents' views of and preferences for sexual and reproductive health services in Burkina Faso, Ghana, Malawi and Uganda. *Afr J Reprod Health* 11: 99-110.
38. Kappahn CJ, Wilson KM, Klein JD (1999) Adolescent girls' and boys' preferences for provider gender and confidentiality in their health care. *J Adolesc Health* 25: 131-142.
39. Shiferaw K, Getahun F, Asres G (2014) Assessment of adolescents' communication on sexual and reproductive health matters with parents and associated factors among secondary and preparatory schools' students in Debremarkos town, North West Ethiopia. *Reproductive Health* 11: 2.
40. Lindberg C, Lewis-Spruill C, Crownover R (2006) Barriers to sexual and reproductive health care: urban male adolescents speak out. *Issues Compr Pediatr Nurs* 29: 73-88.
41. Hokororo A, Kihunrwa AF, Kalluvya S, Changalucha J, Fitzgerald DW, et al. (2015) Barriers to access reproductive health care for pregnant adolescent girls: a qualitative study in Tanzania. *Acta Paediatr* 104: 1291-1297.
42. Rani M, Lule E (2004) Exploring the socioeconomic dimension of adolescent reproductive health: a multicountry analysis. *Int Fam Plan Perspect* 30: 110-117.
43. Govindasamy P, Kidanu A, Banteyerga H (2002) Youth Reproductive Health in Ethiopia. Calverton, Maryland: ORC Macro.