Original research paper: Survey of knowledge and source of information relating to reproduction and sexually transmitted infections among senior secondary schools students in a military barracks in Nigeria

Abstract

Context: Adolescents seek health information from diverse sources. When such information is appropriately sought, correct and complete, it ensures an understanding of their reproductive health needs and encourages healthy sexual decision making and behaviors.

Objective: To determine the level of knowledge and source of information about reproduction and sexually transmitted infections among senior secondary schools students in Ojo military barracks, Lagos.

Materials and methods: A cross-sectional study of 400 senior secondary schools students in Ojo military barracks, Lagos, selected using multistage sampling technique was done. Data collection employed pretested, self- administered structured questionnaires. Data was analysed using statistical package for social sciences version 17. Tests of statistical significance were carried out using chi square and t tests. A p value of <.05 was considered significant.

Results: Majority of them 391(97.8%), were in the age group (10-19 years) while the mean age was 15±2.4 for males and 15±2.2 for females respectively. Information on sexual and reproductive health was sought from the electronic media by 238(59.5%), 115 (52.0%) males and 123 (68.7%) females; peer group 231(57.8%), 120 (54.3%) males and 111 (62.0%) females as well as print media and other sources with a statistically significant difference in this practice between the males and females (*P*=.01). Only 38 (9.5%) had very good knowledge. The sexually experienced were less knowledgeable than the non- experienced (3.7 ± 1.3 and 3.9 ±1.3 respectively; *P*<.05). Knowledge was found to increase with age (*P*<.05). Females had more knowledge than males (*P*<.05).

Conclusions: Overall knowledge was assessed as fairly good, while key sources of information were the electronic media and peer groups. Interventions including peer education are recommended to ensure that these sources provide veritable information on reproductive health.

Key words- Knowledge and source of information, reproduction, sexually transmitted infections, senior secondary schools students, military barracks, Lagos.

1.0 Introduction

The World Health Organization (WHO) defines an adolescent as a person between the age of 10 and 19 years, youths are defined as persons between the age of 15 and 24 years, while young people are from 10 to 24 years [1,2,3]. Nigeria's adolescent health policy has defined the adolescent age group as falling between the ages of 10 and 24 years [4].

Young people stand at the brink of a future filled with possibilities, and society's obligation to address their educational and health needs is more critical than ever. Nonetheless, this group is caught between tradition and the effect of sociocultural changes brought about by changing world order and peculiar local conditions. As the Nigerian society tends increasingly towards urbanization and modernization, expanding educational and economic opportunities have resulted in a drastic reduction in the influence that traditional codes of conduct bring to bear on young people's sexuality [5]. In addition, young people seek information about sexual life from a variety of sources such as parents, peers, religious leaders, health providers, teachers, magazines, books and electronic media [6]. While they receive a wealth of information from these diverse sources, a good deal of this information may be incorrect, incomplete or misleading.

The adolescent population is increasing globally and constitutes one-fifth (1.2 billion) of the world population [1]. Four out of every five adolescents live in developing countries, including Nigeria [1,7]. The Nigerian adolescents comprises about 30% of the total population, according

to estimates made in 2006 [1,2,3]. With this increasing population, more adolescents are expected to be equipped with the requisite knowledge and correct source of information on reproduction and sexually transmitted infections. Instead their health needs pertaining to knowledge and source of information about reproductive health are often misunderstood, unrecognized or underestimated. Integration of services is a huge challenge in developing countries due to socio- cultural barriers as well as difficulty in understanding the needs and expectations of adolescents [8]. As a result, the reproductive health services of most of these countries are traditionally targeted at married couples [9]. But this large and important group cannot be ignored or neglected in the health care agenda of any nation.

Limited research shows little or no knowledge about sexual and reproductive health matters among adolescent [10, 11, 12], that adolescents are indulging in premarital sex more frequently at an early age [10, 12]. According to the 2008 Nigeria National Demographic and Health Survey (NDHS) for instance, the percentage of girls aged 15-19years who had had sexual intercourse in the 12 months preceding the interview were 33.3% [12], compared to the reports of the 2003 NDHS where 20% of girls aged 15- 19 had initiated sex at the time of the interview [2]. Also the incidence of pregnancies among them is rising and most of them face the risk of induced abortions under unsafe conditions [12, 13]. Sexually active adolescents are at an increased risk for sexually transmitted infections due to their increased rates of sexual activity, immature development of the adolescent female cervix, practical difficulties in planning sexual activity and inherent barriers to related guidance and/or medical treatment [11].

The negative effects of modernization among other factors reduce the influence that families have on effectively promoting positive attitude and healthy sexual behaviour among adolescents and youths. Institutionalization of sexuality education has been suggested as an immediate effort

at creating awareness about sexuality based issues [14]. In Ojo Military Barracks Lagos and institutionalization in the barracks, it is important to create a supportive environment that would positively influence knowledge and behavior of adolescents and also help in increasing access to correct and complete information on reproductive health. With this backdrop, the broad aim of this study therefore is to determine the level of knowledge and source of information about reproduction and sexually transmitted infections among senior secondary schools students in Ojo military barracks, Lagos.

2.0 Methodology

2.1 Description of study setting

Ojo military cantonment is the largest military barracks in Nigeria. It is located in Ojo local government area of Lagos state in south western Nigeria. The barracks has an estimated population of over 30,000 inhabitants comprising military personnel from various army units, their families and dependants. The residential area is divided into three major clusters of houses. The officers' village is located in an exclusive part of the barracks quite far away from the quarters for the non – commissioned soldiers (otherwise referred to as "other ranks").

Three secondary schools are located within the same vicinity (about half to one kilometer away from each other). The schools include one army- owned co-educational school (Command Day Secondary school) and two Lagos state owned schools, Cantonment Girls' secondary and Cantonment Boys' High schools.

The barracks has located in it, office blocks, a vocational center, two churches (one Catholic and one Protestant) and a mosque, a Medical Centre that offers curative services, immunization and family planning services to the military personnel, their families and dependants.

2.2 Study design

This is a cross sectional descriptive survey.

2.3 Study population

The study population comprises senior secondary school (SS) students (SS1-3) of the three secondary schools. The three schools have a total population of 2903 senior students (SS1-3); a breakdown of this population is as follows: - Command Day Secondary School=1512; Army Cantonment Boys' Senior Secondary School =671; Army Cantonment Girls' Senior Secondary School=720. Each class (SS1-2) is made up of between 5-7 arms in each of the three schools while SS3 classes have 3-4 arms. However, students residing outside the barracks and students whom none of the parents is a military personnel are excluded from this study.

2.4 Sample size determination

In a previous study in Nigeria among similar population, level of sexual activity (p) was 52.0% [15].The sample size was determined using the formula for the calculation of sample size in populations greater than 10,000, $n = z^2pq/d^2$ [16], where n = minimum sample size; p = proportion of sexually active; q= complementary proportion of p, i.e. the proportion of not sexually active = 1-p [16]; d = desired precision at 5%= 0.05; z = a constant at 95% confidence interval z = (1.96). Therefore, p = 0.52, while q= 1-p = 0.48, Substituting values,

$$n = \frac{(1.96)^2 \times 0.52 \times 0.48}{(0.05)^2} = 383.55$$

Then a conversion was made using the formula for the calculation of nf, = minimum sample size for populations less than 10,000,

$nf = \frac{n}{1+n/N}$ [16], where N = target population= 2,903

nf = 340 students.

Anticipating a response rate of 90%, an adjustment of the sample size estimate to cover for non-response rate was made by dividing the sample size estimate with a factor f, i.e. n/f,where f is the estimated response rate [16].Thus the calculated sample size =340/0.90 = 378 students. However, 400 questionnaires were distributed.

2.5 Sampling technique

A multistage sampling technique was used.

Firstly, simple random sampling technique was used to select three arms from each of the classes (SS1-2) and 2 arms of the SS3 classes.

Secondly, stratified sampling technique was used to allot respondents according to relative school populations.

- Command Day Secondary school (CDSS) = 232 =58.0%
- Cantonment Girls' High school = 95 =23.8%
- Cantonment Boys' High school = 73 =18.2%

Total minimum sample size=400=100%.

Thirdly, the class registers were used as the sampling frame. For the single sex schools, simple random sampling technique was used to select eligible and consenting students until the required number allotted to the selected arms in each class (SS1-3) has been obtained. For CDSS (which is a co-educational school), the class registers were initially stratified by sex into males and females before proportionate sample of each sex was taken using simple random sampling technique was used to select eligible and consenting students until the required number allotted to the selected arms in each class (SS1-3) has been obtained.

2.6 Data collection technique

Data collection in this study employed pretested, self-administered structured questionnaires developed from review of relevant literatures and interview of some adolescents. All questions were written in English language and pre-tested in similar schools in Navy Barracks Ojo. This

was done, to check for its reliability and validity. Also determined were the appropriateness of format and wording of the questionnaire as well as time needed to carry out interviews. Thereafter the instruments were reviewed by senior colleagues, necessary adjustments and corrections were effected before administering the questionnaire to the study population.

The questionnaire is divided into five sections (A-E) to obtain data on A) the socio- demographic characteristics of the respondents; B) sources of information; C) knowledge about reproductive health; D) relationship between socio-demographic characteristics and students' knowledge of reproductive health and E) relationship between sexual behavior and students' knowledge of reproductive health.

On the administration of the questionnaires, time was taken to explain the questions to avoid ambiguity. Respondents who could not fill the questionnaires immediately were given a minimum of two days before collection.

2.6.1 Knowledge score: An aggregate of the students' knowledge of reproductive health was assessed using standardized score points. Five correct responses out of 5 were graded as very good knowledge, 3 – 4 correct responses was graded as fairly good knowledge while 1-2 correct response was taken as poor knowledge.

2.7 Data management and analysis

The data were scrutinized and entered into the computer. Data cleaning was done by carrying out range and consistency checks. Data were analyzed in respect to the socio-demographic characteristics of the respondents; sources of information; knowledge about reproductive health; socio- demographic characteristics and students' knowledge of reproductive health; sexual behavior and students' knowledge of reproductive health. .

Descriptive and analytical statistics of the data were carried out using statistical package for social sciences (SPSS) Windows version 17.0 [17]. Chi-square and t-tests were used to document

presence of statistically significant associations between variables. A p value of <.05 was considered significant. Descriptive data were presented as simple frequencies and percentages.

3.0 Results

A total of 400 respondents participated in the study. This was made up of representative samples from the co-educational school and the two single- sex schools. The response rate was 100%. **Table 1 shows the socio- demographic distribution of the respondents.** The majority of the students 391(97.8%) were in the adolescent age group (10-19 years), only 9 (2.2%) respondents were in the age range of 20-24 years; all the respondents above 19 years were from the girls' school. The mean age of the respondents was 15±2.4 for males and 15±2.2 for females. There were more males 221(55.3%) than females 179(44.7%). Christianity and Islam were the predominant religion with Christians making 249(62.3%) and Moslems 151(37.7%). A higher proportion of the respondents 258(64.5%) reside in the quarters for the 'non-commissioned' soldiers (otherwise known as 'other ranks') while 142(35.5%) reside in the officers' quarters. **Table 2 shows students source of information on sexual and reproductive health.** Two hundred and thirty eight (59.5%) of the respondents received the information they have on sexual and reproductive health from the electronic media, followed by peer group 231(57.8%). For the males, siblings 131(59.3%) and peers 120(54.8%) were the most important source. For the females, the most important source is electronic media 123(68.7%) followed by peers

111(62.0%). Only few of the students 24 (6.0%) received reproductive health information from their parents of this, more girls than boys. However the difference in this practice between the male and female respondents was a statistically significant (χ^2=6.384, df=7, ***P***=.01). None of the respondents received information from religious leaders.

Figure 1 shows respondents' knowledge of reproductive health and STIs. Questions asked tested knowledge of sexually transmitted infections types, transmission and prevention as well as knowledge of conception. Thirty-eight (9.5%) respondents had very good knowledge, 240 (60.0 %) had fairly good knowledge, 110 (27.5%) had poor knowledge while 12(3.0%) had no knowledge of reproductive health and STIs/HIV/AIDS at all. Overall, the knowledge of the students was assessed as fairly good. Out of a maximum score of 5, the mean knowledge was 3.4 and the median score 3.6 ±1.2 points.

Table 3 shows sexual behavior and students' knowledge of reproductive health. One hundred and fifty four (38.5%) of the respondents had experienced penetrative sexual intercourse at one time or the other; 81(52.6%) of them were males and 73(47.4%) were females. However there was no statistically significant difference in this practice between the male and female respondents (χ^2=0.713, df=1, ***P***=.20). Also students who had experienced sexual intercourse were less knowledgeable than those who had not, 3.7 ± 1.3 and 3.9 ±1.3 respectively; this finding was statistically significant (***P***<.05). Students who had sexual intercourse three months prior to the study had more knowledge scores compared to those who did not, but this finding was not statistically significant (***P***>.05).

Table 4 shows association between some socio-demographic characteristics and students' knowledge on reproductive health. The mean score for reproductive health knowledge in the category of students in the age group 20 – 24 years was highest 3.9 ±1.3 followed by 15 – 19

years age group 3.8 ± 1.2 while it was least for the age of 10 – 14 years 3.2 ±1.6. Knowledge was found to increase with age. This finding was statistically significant (*P*<.05). Female respondents (3.8 ± 1.4) were found to be more knowledgeable than their male counterpart (3.4 ±1.2). The finding was also statistically significant (*P*<.05). Among the students who were Christians, the mean reproductive health knowledge was 3.9 ±1.4. More Christians were found to be knowledgeable but the finding is not statistically significant. (*P*>.05) Students who were brought up in polygamous homes had a reproductive knowledge score of 3.7 ± while those from monogamous homes had a mean of 3.8 ± 1.4. This finding was not statistically significant (*P*>.05). The students whose father's socioeconomic status was low, medium and high had a mean knowledge score for reproductive health of 3.4 ± 1.2, 3.7 ±1.4, 3.8 ± 1.4 respectively. Respondents with higher socioeconomic status had higher mean knowledge scores. These findings were not statistically significant (*P*>.05). The same pattern as above was observed among students with respect to mothers' socioeconomic class and respondents' mean knowledge scores. This observation was not statistically significant (*P*>.05). Students whose fathers had completed secondary education had mean reproductive health knowledge of 3.7 ± 1.4 while those with lower educational status had a mean score of 3.6 ± 1.2. This finding was not statistically significant (*P*>.05). Similar observation was made with regard to the mothers' educational status but the finding here is statistically significant (*P*< .05).

4.0 Discussion

Majority of the respondents (97.8%) were aged between 10-19 years. This falls within the adolescent age group [1, 2, 3]. Studies have shown that adolescents and youths constitute a high-risk group for unwanted pregnancy and STIs including HIV/AIDS. This group is in a transition period to adulthood and is likely to indulge in sexual experimentation as well as involve in unprotected sexual activity [6].

This study observed that the most cited source of reproductive health information media (electronic), peer groups and siblings. This finding agrees with findings from other studies in which the mass media was largely the source of health information [6, 11, 18, 19]. However, this finding is contrary to that by Barker and Rich in which the main source of information among in-school adolescent in Nigeria was the school, but they added that the information may not necessarily be useful [20]. Friends and other peer groups were also reported to be sources of information on reproductive health issues especially among young persons [21]. The implication of this finding is that the students in this environment may be exposed to information, which are likely to be incorrect, incomplete or prejudiced since peer group may not be very reliable sources; neither is information on the media censored [6]. Bamise and colleagues in Kenya have

blamed this on lack of well-defined policies stipulating how health information should be provided and lack of appropriate information resources in school [22]. Accurate information helps adolescents understand their reproductive health needs; it also encourages healthy sexual decision making and behaviors [23].

Those who received the information from their parents and schools were low, 6.0% and 35.0%, respectively. This trend is consistent with results of another study [6]. Parental sex communication benefits a variety of adolescent sexual and reproductive health outcomes as studies have linked receipt of sex information from parents with later sexual debut, reduced number of sexual partners [24,25,26]. It has been reported that adolescents perceive information from parents as the most trusted and influential in sexual decision making and behavior [27].

Less than one tenth of the students received reproductive health information from their parents, of this more girls than boys. Girls are disproportionately affected by the burden of reproductive health morbidity (STI, unwanted pregnancy, abortion) and are more likely than boys to seek for information about reproductive health. Also, parents are more likely to discuss reproductive health issues with girls than boys because of the belief that boys will learn somehow through experimentation [28, 29].

The findings from this study clearly identify a knowledge gap about reproduction and sexually transmitted infections including human immunodeficiency virus**.** Though only few (9.5%) respondents had very good knowledge on this topic, overall the knowledge of the students was assessed as fairly good. While another study has similarly reported good knowledge [30], others have shown adolescent students to have gaps in their levels of knowledge and understanding of reproductive health issues and STIs/HIV [10, 21, 28]. Our findings also imply that the deficiencies in knowledge show the inadequacies of the mass media to provide correct

information about reproduction and sexually transmitted infections including human immunodeficiency virus. The need to improve on the quality and source of health information arises because incorrect knowledge about STIs/HIV for instance, negatively influences transmission.

Findings from this study that 38.5% of the respondents had experienced penetrative sexual intercourse at one time or the other and that students who experienced sexual intercourse were less knowledgeable than those who had not, highlighting an important point made by the WHO that a great number of young people engage in behaviors that jeopardize not only their current state of health, but often their health for years to come [31].

This study found mean reproductive health knowledge to be higher among the older age group 20-24 and this is similar to the findings from the 2008 NDHS which showed higher level of knowledge among the same age group [12]. Students who reside in officers' quarters for senior military officers (Lieutenants and above) were more likely to have better knowledge about reproductive health. This may not be unconnected with their parents' educational and social status which avails them of better access to veritable health information as well as informed interaction and socialization among peers. These findings are consistent with those in earlier works that have reported disparities in sexual and reproductive health variables across certain socio- demographic groups [32, 33].

Conclusions: Findings from this study have shown that young people living in the barracks had inadequate knowledge of reproductive health matters indicting the sources of their information. We therefore recommend an improved multi sectorial approach in reproductive health and sexually transmitted infections including HIV/AIDS education. The mass media can offer a wide reach but there is need for more censored media-driven health education campaigns. **S**ince peer

group is a favored source of information for these adolescents, trained peer educators may be a viable option in disseminating information to young people in his environment. Other measures include: family life education and greater participation of schools, with training of teachers on issue related to this topic.

Ethical consideration

Verbal permission to carry out this study was sought and obtained from the barracks' commander and the principals of the three schools. Consent and co-operation of the respondents was solicited and obtained for the conduct and publication of this research study. The questionnaires were administered individually to the respondents in school hall/ laboratory in batches with the students well-spaced out (to ensure confidentiality). This was supervised by the principal researcher with the assistance of some trained research assistants comprising of adolescents (school leavers). Respondents' privacy and confidentiality was further guaranteed by collecting the completed questionnaires in sealed boxes. All authors hereby declare that the study have been examined and approved by the University of Ibadan and University College Hospital ethics committee, Nigeria and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

Limitations of the study

This study is based on self-reported behaviors, and the data is therefore subject to reporting errors of unknown magnitude and direction. Another limitation was the inability of a number of respondents to read and understand the questions; to minimize this research assistants were

mandated to read and interpret aspects of the questionnaire as the need arose; this was also time consuming.

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Tables and figure

Table 1: Distribution of respondents' socio-demographic characteristics

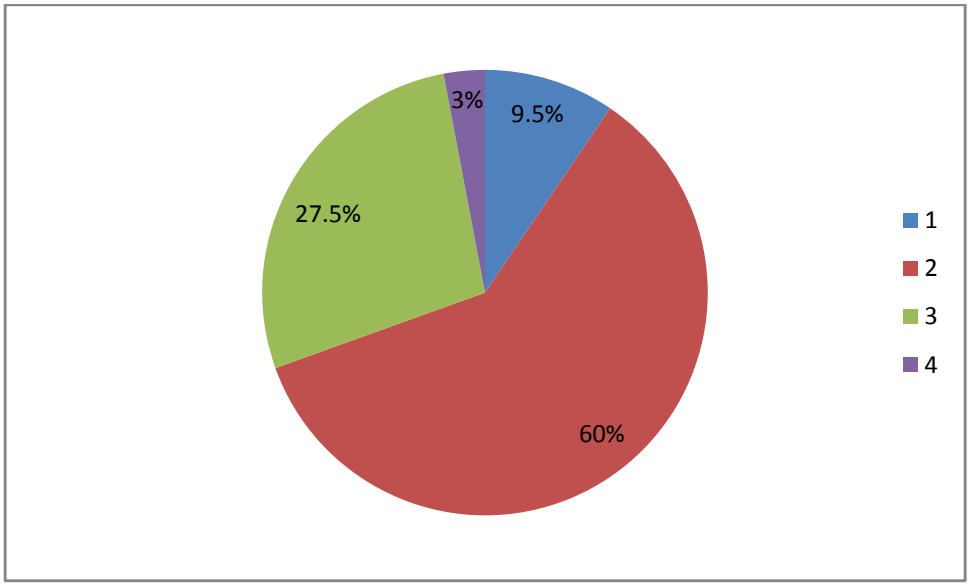
Characteristics	Male n (%)	Female n (%)	Total n (%)
School			
Co-educational school	148 (67.0)	84 (47.0)	232 (58.0)
Girls' school	0 (0.0)	95 (53.0)	95 (23.7)
Boys' school	73 (33.0)	0 (0.0)	73 (18.3)
Total	**221 (100)**	**179 (100)**	**400 (100.0)**
Age group (yrs)			
10 – 14	88 (40.0)	63 (35.0)	151(37.8)
15 - 19	133 (60.0)	107 (60.0)	240 (60.0)
20 – 24	0 (0.0)	9 (5.0)	9 (2.2)
Total	**221 (100)**	**179 (100)**	**400 (100.0)**
Sex	**221(55.3)**	**179(44.7)**	**400 (100.0)**
Religion			
Christian	130 (59.0)	119 (66.0)	249 (62.3)

Moslem	91(41.0)	60 (34.0)	151 (37.7)
Total	**221 (100)**	**179 (100)**	**400 (100.0)**
Residence			
Officers' Quarters	84(38.0)	58 (32.0)	142 (35.5)
Other ranks Quarters	137(62.0)	121 (68.0)	258 (64.5)
Total	**221 (100)**	**179 (100)**	**400 (100.0)**

Table 2: Sources of information on reproductive health

Characteristics	**Male n (%)**	**Female n (%)**	**Total n (%)**
Parents	2 (0.9)	22 (12.3)	24 (6.0)
Siblings	101 (45.7)	87 (48.6)	188 (47.0)
Peer group	120 (54.3)	111 (62.0)	231 (57.8)
School teachers/counselor	71 (32.1)	69 (38.5)	140 (35.0)
Print media (magazines and novels)	79 (35.7)	107 (59.8)	186 (46.5)
Electronic media (films/ videos)	115 (52.0)	123 (68.7)	238 (59.5)
Seminar	41 (18.6)	69 (38.5)	110 (27.5)
Religious leaders	0 (0.0)	0 (0.0)	0 (0.0)
Other sources	17 (7.7)	13 (7.3)	30 (7.5)
(χ^2=6.384, df=7, *P*=.01)			

Figure 1: Knowledge about reproductive health



1- Very good knowledge, 2- Fairly good knowledge,

3- Poor knowledge 4- No knowledge

Table3: Sexual behavior and students' knowledge of reproductive health

Characteristics	Ever had sexual intercourse		
	Yes n (%)	**No n (%)**	**Total n (%)**
Male	81 (52.6)	140 (56.9)	221(100.0)
Female	73 (47.4)	106 (43.1)	179 (100)
Total	**154 (100.0)**	**246 (100.0)**	**400 (100.0)**

(χ^2=0.713, df=1, *P*=.20)

Students' reproductive health knowledge

	No of respondents	**%**	**Mean**	**SD (±)**
Ever had sexual intercourse*				
Yes	154	38.5	3.7	1.3
No	246	61.5	3.9	1.3
Total	**400**	**100.0**		
Had sex three months prior to study**				
Yes	64	41.6	3.5	1.4
No	90	58.4	3.7	1.2
Total	**400**	**100.0**		

* *P*<.05 ** *P*>.05

Table 4: Socio- demographic characteristics and knowledge of reproductive health among the sexually experienced respondents

Characteristics	No of respondents	%	Mean	SD (±)
Age group (yrs) *				
10 – 14	51	33.6	3.2	1.4
15 - 19	92	60.5	3.8	1.2
20 – 24	9	5.9	3.9	1.3
Total	**152#**	**100.0**		
Sex *				
Male	81	52.6	3.2	1.4
Female	73	47.4	3.8	1.2
Total	**154**	**100.0**		
Religion**				
Christian	108	70.1	3.9	1.4
Moslem	46	29.9	3.6	1.2
Total	**154**	**100.0**		
Family type**				
Polygamous	105	65.6	3.8	1.4
Monogamous	53	34.4	3.6	1.2
Total	**154**	**100.0**		
Father's socioeconomic Status**				
Low	72	46.8	3.4	1.2
Middle	74	48.0	3.8	1.4
High	8	5.2	3.7	1.3
Total	**154**	**100.0**		
Mother's socioeconomic Status**				
Low	53	34.4	3.3	1.2
Middle	91	59.1	3.6	1.4
High	10	6.5	3.9	1.3
Total	**154**	**100.0**		
Father's education**				
At least 2^0school	100	64.9	3.8	1.4
Below 2^0 school	54	35.1	3.4	1.2
Total	**154**	**100.0**		
Mother's education*				
At least 2^0school	61	39.6	3.9	1.3
Below 2^0 school	93	60.4	3.6	1.2
Total	**154**	**100.0**		

* *P*< .05 ** *P*>.05 # missing values