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### **Determinant of HIV and Pregnancy Prevention Knowledge Among In-School Adolescents in Ondo State, Nigeria**

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#### **Abstract:**

This study seeks to assess the level of knowledge of visually-impaired (VI) and non-visually impaired (NVI) in-school adolescents about methods of preventing HIV and unintended pregnancy and to determine some personal, parental and family characteristics influencing their level of knowledge. Comparative cross-sectional research design was used to select 394 VI and NVI in-school adolescent boys and girls aged 15-19 years for this study through a multi-stage sampling technique. Data were collected using a structured questionnaire administered in Open Data Kit (ODK). Data analysis was done using frequency distribution and Binary Logistics Regression. About 70% and 94% of the VI and NVI adolescents respectively were knowledgeable about HIV prevention, with abstinence been mostly mentioned. The VI and NVI adolescents who were knowledgeable about pregnancy prevention were 66% and 91% respectively, with Condom use been mostly mentioned by both groups of adolescents. Some personal characteristics influencing their level of knowledge include their age, sex, involvement in extra-curricular activities and class at school. Parental and family characteristics influencing their knowledge include parental level of educational attainment at secondary or higher level, type of family and having

other siblings. Efforts at increasing knowledge about pregnancy and HIV prevention among adolescents with and without disabilities should be the topmost priority of adolescents sexual and reproductive health.

**Key words:** Adolescents, Knowledge, Unintended pregnancy, HIV prevention, Visual-impaired, Non-visually impaired, Nigeria

## Introduction

Adequate knowledge about HIV and unintended pregnancy prevention among adolescents is germane to reduction in incidences of HIV, unintended pregnancies and unsafe abortion among them. Adolescents are usually the targets of efforts aimed at HIV and pregnancy prevention globally and particularly in Low and Middle income countries (LMICs) (Centers for Disease Control, 2023; Wilkins *et.al*, 2022). Yet, little effort is focused on adolescents with disabilities. The World Health Organisation (WHO) defined adolescents as individuals between the age of 10 and 19 (WHO, 2001). This is further divided into early (10-14) and late (15-19) adolescence (Igras, Macieira, Murphy, & Lundgren, 2014; Morris & Rushwan, 2015). About one sixth of the world population are adolescents with about 90% of them residing in low and middle income countries (WHO, 2017; UN World Population Prospects, 2017). While Adolescents aged 15-19 years constitute some 10-12% of sub-Saharan Africa's population (Ringheim & Gribble, 2010), adolescents 15-19 years make up some 10.6% of Nigeria's over 200 million population (National Population Commission (NPC) [Nigeria] and ICF. 2019. *Nigeria Demographic and Health Survey 2018*, 2019; United Nations, 2019),

Globally, close to 230 million people get pregnant on yearly basis with less than 70% of this resulting in live births, while a little above 30% end in induced abortion, miscarriage or stillbirth (Population Reference Bureau, 2021). About 40% of these pregnancies are unwanted, with more than half of them resulting in induced abortion (Singh, Remez, Sedgh, Kwok, & Onda, 2018), most of which are performed under unsafe conditions. It is estimated that 11% of all births globally on yearly basis are from adolescent girls 15-19years, most of who reside in LMIC and sub-Saharan Africa bearing the largest proportion of such births (WHO, 2014; Christiansen, Gibbs & Chandra-Mouli, 2013). As of 2019, an estimated 50% of 21 million unintended pregnancies occur among adolescents 15-19 years in LMICs, with 55% of such pregnancies ending in abortion often performed under unsafe conditions (Darroch, Woog, Bankole, & Ashford, 2016; Sully et al., 2020). Incidentally, deaths from abortion complications from this group of adolescents have been found to be the highest (Bell, Omoluabi, OlaOlorun, Shankar, & Moreau, 2020; Yokoe et al., 2019). In Nigeria between 1990-1994

& 2015-2019, unintended pregnancy resulting in abortion rose from 35% to 48% (Guttmacher, 2022)

HIV/AIDs and unintended pregnancies are the major outcomes of adolescents' risky sexual behaviour and practices globally (Centers for Disease Control, 2023), thereby making HIV and unintended pregnancy prevention cogent global health priorities. Studies have shown that across different regions of the world, adolescents now reach puberty earlier than the norm, become sexually active early, though they marry later; and are engaged in all kinds of risky sexual behaviours (Abah, Bassey, Edu, & Ovie, 2020; Kumar et al., 2022; Pringle et al., 2017). Incidentally, adolescent girls are at more disadvantaged position compared to their male counterparts in most cases, although male adolescents are more often involved in risky sexual behaviours (Pharr et al., 2017). Yet, little is known about adolescents with disability generally and particularly adolescents with visual impairment. Generally, adolescents with disabilities have the same sexual and reproductive health (SRH) needs as adolescents without disabilities, but often times they are neglected in Adolescents' SRH programs, thereby making them more vulnerable to sexual abuse, rape and unprotected or early sexual debut (Ademokoya & Igbeneghu, 2016; Babalola, Nwokocha, & Adewole, 2021) Visually impaired (VI) adolescents are at a more disadvantaged position compared to the other forms of disability, due to their inability to see what goes on around them.

Although there are multiple factors found to be responsible for increased incidences of HIV and unwanted pregnancies among adolescents (Yakubu & Salisu, 2018), the heightened trend of HIV and unwanted pregnancy among adolescents are often predicated on lack of/poor knowledge about prevention methods, despite awareness among adolescents about methods of HIV and pregnancy prevention. Alukagberie, Elmusharaf, Ibrahim, and Poix (2023) identified these factors as either individual, family, communal, or school based among others. Bankole, Biddlecom, Guiella, Singh, and Zulu (2007) found a high level awareness but inadequate knowledge of pregnancy and HIV prevention among very young adolescents, 12-14years in four SSA countries. A similar study carried out in Nigeria on the knowledge of HIV among adolescents in senior secondary school found that about one third of adolescents interviewed had a good knowledge of HIV prevention (Ajide & Balogun, 2018). Having good/adequate knowledge of SRH, particularly relating to HIV and unwanted pregnancy among adolescents in Nigeria is germane to reduction in the incidences of risky sexual behaviour that culminates in HIV infection, unwanted pregnancy and abortion (Alawode,

Ogunwemimo, Bolorunduro, & Awoleye, 2021; Banjo, Oni, Kumolu, & Bankole, 2023; Michael, 2024)

Nigeria is the most populous country in SSA with an estimated population of about 230million people, with adolescents constituting about 21,3% of the population (NPC, Nigeria and ICF. 2019). HIV prevalence, put at 3.5% among adolescents 15-19 in Nigeria is the highest compared to other countries in western and central African region (UNAIDS; GAPS Report, 2014). Despite concerted efforts to promote SRH by reducing HIV and early/unwanted pregnancies among adolescents since the ICPD conference of 1994 (United Nations, 1995), these negative outcomes remain a major challenge among adolescents in developing countries of the world, particularly in sub-Saharan Africa. There is evidence that policies on the prevention of pregnancies among adolescents abound in SSA (Ahinkorah, Kang, Perry, & Brooks, 2022), yet the region leads global rankings in terms of HIV and adolescents' pregnancies (Burton, 2017). Available evidence show that school based SRH intervention often target adolescents in schools to raise awareness about ways to prevent HIV and/unwanted pregnancies (Centers for Disease Control, 2020), particularly among female adolescents (Omobola, Obafemi, Olanrewaju, Oluseyi, & Kadijat, 2020; Wilkins et al., 2022). Despite the perceived advantages this avenue is expected to have on the reduction of HIV and unwanted pregnancies, many adolescents still practice unsafe sex and have multiple sex partners (Hassan et al., 2016; Mason-Jones et al., 2016; Tolli, 2012). Hence, the need to assess individual characteristics associated with their knowledge of HIV and pregnancy prevention.

In addition to the individual factors relating to the knowledge of HIV and pregnancy prevention, studies have also identified parental and family characteristics contributing to unintended pregnancies and increased HIV infection among adolescents in Nigeria. For example, a study that assessed the perception of secondary school students in Nigeria relating to unwanted pregnancy found that poor family background, lack of parental care. Coming from a polygamous family were some of the students perception about unwanted pregnancy(Achema, Emmanuel, & Moses, 2015). If adolescents could perceive some of these factors as responsible for unwanted pregnancy, they are also relevant in improving their knowledge about prevention of unwanted pregnancy. Similarly, other studies also found a positive relationship between parental and family characteristics and causes of teenage pregnancy, identifying family environment as a major factor influencing sexual behaviour of young people including adolescents (Gunawardena, Fantaye, & Yaya, 2019; Titiloye & Ajuwon, 2017; Tsala Dimbuene & Kuate Defo, 2012). Hence, the need to also assess parental and family characteristics associated with adolescents' knowledge of HIV and pregnancy prevention.

Evidence abound in the literature regarding factors influencing the practice of unsafe sex among adolescents which eventually results to HIV and unwanted pregnancies in Nigeria. Akombi-Inyang, Woolley, Iheanacho, Bayaraa, and Ghimire (2022) examined the trend and socioeconomic predictors of adolescent pregnancy across the six geopolitical zones of the country and found household poverty, increasing age and low education as prominent predictors of adolescent pregnancy in the country. An earlier study conducted to examine the influence of HIV/AIDS knowledge on adolescents' risky sexual behaviour in Nigeria also found HIV knowledge, age and sex as significant predictors of risky sexual behaviour among adolescents in the country (Pharr et al., 2017). Given the adverse health outcomes of HIV and unintended pregnancy among adolescents, this study therefore seeks to assess the level of knowledge of visually impaired and non-visually impaired in-school adolescents about ways/methods of preventing HIV and unwanted pregnancy and to examine the influence of some personal, parental and family characteristics on their knowledge of HIV and pregnancy prevention.

## **Methodology**

### **Sampling technique**

Sample size equation to compare 2 proportions was used to determine the sample size for the study. Assuming a large population without the knowledge of the variability of the proportion of the VI to the NVI and expecting that VI will be less than the NVI;  $P_e$  of 0.5 and  $P_c$  of 0.65 were assumed for the two groups of adolescents respectively. Thus,  $n = [Z_{\alpha}(2PQ)^{1/2} - Z_{\beta} (P_e Q_e + P_c Q_c)^{1/2}]^2 / (P_e - P_c)^2$  gave a sample size of a little above 400 respondents. Where  $Z_{\alpha} = 0.05$ ;  $Z_{\beta} = 0.2$ ;  $P_e = 0.5$ ;  $P_c = 0.65$ ;  $Q_e = 1 - P_e$ ;  $Q_c = 1 - P_c$  and with the assumption of 10% non-response rate, the study was expected to interview about 445 adolescents. However, due to the reduced number of visually impaired adolescents, only 394 adolescents in total were interviewed.

Comparative cross-sectional research design was used for this study. A multi-stage sampling technique was used to select adolescents who participated in this study. The study participants were boys and girls aged 15-19 years. The first stage was the purposive selection of a school for the VI, which happened to be the only one in the state. This necessitated the purposive selection of a school for the NVI within the same local government area. Both schools were government owned boarding schools. For the NVI school, since there were more than desired number of students in the required age range 15-19 years;

students were selected randomly across the senior classes until the required number of participants were achieved. For the VI School, since there were limited numbers of students in the required age category (15-19), all the students who were available and willing to participate in the study were interviewed.

### **Data Collection**

Quantitative data were collected from the study participants using a structured questionnaire administered in Open Data Kit (ODK). Data collection took place between August and October 2019. The questionnaire consists of 6 sections: Background Characteristics; Family Context & Background; Sexual & Reproductive health knowledge, Perception & Help seeking behavior; Sexual Practices & Reproduction; Contraception; Knowledge of HIV/AIDs & Help seeking behaviour. The School for the Visually Impaired housed both primary & secondary students. Students in the primary section who were within the age bracket for the study were also interviewed. On the other hand, the School for the Non-visually Impaired housed only those who are in the secondary school – Junior Secondary School 1-3 (JSS1-3) & Senior Secondary School 1-3 (SSS1-3). However, because most of the students in the JSS 1-3 were less than 15 years, the study participants were limited to those in SSS 1-3.

### **Statistical analysis**

The analysis in this study was carried out in two stages. The first stage was the descriptive analysis of the students' characteristics; and their parental and family characteristics. The second stage was the application of the binary logistics regression models based on the outcome variables. For each of the binary outcome - Knowledge of pregnancy prevention and HIV prevention knowledge, two models were fitted to test the association between students' characteristics, some parental & family characteristics and the outcome. The first model (model 1) examined the influence of some of the students' characteristics on the outcome variables; Model 2 controlled for some parental and family characteristics while examining the influence of some of the students' characteristics on the outcome variables. Data were analyzed using STATA 14.

### **Ethical Approval and consent to participate**

This study was approved by the Health Research Ethic Committee (HREC) of the Institute of Public Health, Obafemi Awolowo University (OAU), Ile Ife, Nigeria (IPH/OAU/12/1162); and the Ondo State Health Research Ethics Committee (OSHREC), Ministry of Health, Ondo State, Nigeria (OSHREC/12/02/2019/102). Informed consent was gotten from the

students aged 18-19 to participate in the study. Verbal ascent to participate was obtained from students below age 18 and consent for them to participate was sought from the guardians (who were also teachers in the school)

### **Results:**

Table 1 below shows some personal, parental and family characteristics of study participants.

While the majority (28.2%) of the Visually Impaired (VI) students were aged 19 (with a mean age of 17 years), about 62% of the Non-visually impaired (NVI) adolescents were aged 15 (with a mean age of 16 years) at the time of the survey. There were more male respondents than female respondents - VI (51%) and the NVI (54%). While most of the VI adolescents were either in primary or junior secondary classes; all of the NVI adolescents were in the senior secondary classes, with about 46% in the senior secondary 2. The table also shows that a sizeable proportion of both the VI (64.8%) and the NVI (73.1%) adolescents were involved in extra-curricular activities. Information about their educational sponsorship, religion and ethnic group are clearly shown on the table Regarding the parental and family characteristics; most of the adolescents have both parents alive at the time of the survey. For those adolescents having both parents alive, about 85% and 84% of VI and NVI adolescents respectively have both parents living together, while the rest had their parents either separated or divorced. Most of the adolescents had their fathers having attained post-secondary education. About 76% of the VI and 83% of the NVI adolescents are from monogamous families with about 39% of the VI and 55% of the NVI adolescents having their mothers attained post-secondary education. Most of the adolescents have other siblings.

Table 2 below shows the knowledge of prevention of HIV and pregnancy among the VI and NVI adolescents. On HIV prevention knowledge, about 70% of VI and 94% of NVI adolescents are knowledgeable about ways to prevent contacting HIV. Majority of the adolescents mentioned abstinence - 88% and 89% of the VI and NVI adolescents respectively; as a way/method of preventing HIV. About 71% and 55% of VI and NVI adolescents respectively mentioned avoidance of sharing needle or sharp objects. Avoiding contaminated blood was mentioned by 61% and 51% of the VI and NVI adolescents respectively; using condom for every act of sexual intercourse was mentioned by 55% and 49% of VI and NVI adolescents respectively. Faithfulness to partner was mentioned by about 53% and 50% of VI and NVI adolescents respectively. When asked if worried about contacting HIV, about 17% and 35% of the VI and NVI adolescents respectively said 'Yes'. About 11% of both the VI and NVI adolescents responded in the affirmative, when asked if they have done anything that could put them at the risk of contacting

HIV,. Regarding their knowledge about ways a girl can avoid getting pregnant, 66% and 91% of VI and NVI adolescents respectively responded that they are knowledgeable about some ways. The use of condom was mostly mentioned by both the VI and NVI adolescents (87% and 77% respectively). The use of pills was mentioned by about 26% and 20% of the VI and NVI adolescents respectively; about 30% and 13% of the VI and NVI adolescents respectively, mentioned non-penetrative sex.

The results of the binary logistics regression showed that VI and NVI adolescents above 15years have higher odds of knowledge about pregnancy and HIV prevention than adolescents who are 15years, except for NVI above 16 years who have lower odds of HIV prevention knowledge. Females have lower odds of knowledge about pregnancy and HIV prevention than the males, with significant relationship existing between sex and knowledge of pregnancy prevention at  $P < 0.05$ . Both VI and NVI adolescents involved in extra curricular activities have higher odds of knowledge about pregnancy and HIV prevention than adolescents who are not. Both VI and NVI adolescents who are not Christians, and who do not belong to the Yoruba ethnic group have lower odds of knowledge of pregnancy and HIV prevention. The VI adolescents who are in senior classes are about four times more likely to have knowledge about pregnancy prevention (OR=3.801; CI=0.819 - 17.651), and about three times more likely to have knowledge about HIV prevention than those in the primary or Junior classes (OR=3.383; CI=0.841 - 13.601). Similarly, the NVI adolescents in SS2 and SS3 classes have higher odds of knowledge about pregnancy and HIV prevention than those in SS1. When some parental and family characteristics were controlled for in model 2 of the binary logistics regression, there were very slight difference in the results of model 1, although the significant relationship between sex and knowledge of pregnancy prevention remained. The result showed that, the VI adolescents whose fathers had above secondary level education, whose mothers had up to secondary level education, who come from polygamous families and who have other siblings have higher odds of knowledge of pregnancy prevention than the reference categories. As regards the knowledge of HIV prevention, a similar pattern was observed except that those from polygamous families have a lower odd of HIV prevention knowledge compared to those from monogamous families.

**Table 1: Individual, Parental and Family Characteristics of the respondents**

Individual Characteristics			Parental and Family Characteristics		
Variables	VI - N=71	NVI - N=323	Variables	VI - N=71	NVI - N=323
Age			Parents Living Status		
15	18 (25.4)	199 (61.6)	Both parents alive	54 (76.1)	293 (90.7)
16	13 (18.3)	79 (24.5)	Either parents	17 (23.9)	30 (9.3)

			alive/both dead		
17	9 (12.7)	37 (11.5)	<b>Parents' living arrangement</b>		
18	11(15.5)	6 (1.9)	Living together	46 (85.2)	245 (83.6)
19	20 (28.2)	2 (0.6)	Not living together (Sep./div.)	8 (14.8)	48 (16.4)
Mean age	17	16	<b>Fathers' Age</b>		
<b>Sex</b>			<50	12 (20.7)	104 (34.2)
Male	36 (50.7)	175 (54.2)	50-59	26 (44.8)	123 (40.5)
Female	35 (49.3)	148 (45.8)	60+	12 (20.7)	56 (18.4)
<b>Present Class in School</b>			Don' Know	8 (13.8)	21 (6.9)
Primary/ Junior Secondary	48 (67.6)	-	<b>Fathers' level of education</b>		
SS 1	9 (12.7)	55 (17.0)	None/Primary/ Don't know	15 (25.9)	22 (7.2)
SS 2	12 (16.9)	149 (46.1)	Secondary	15 (25.9)	87 (28.6)
SS 3	2 (2.8)	119 (36.8)	Higher	28 (48.2)	195 (64.1)
<b>Involvement in Extra-curricular activities</b>			<b>Family setting</b>		
No	25(35.2)	87 (26.9)	Monogamous	41 (75.9)	242 (82.6)
Yes	46 (64.8)	236 (73.1)	Polygamous	13 (24.1)	51(17.4)
<b>School Sponsorship</b>			<b>Mothers' age</b>		
Both parents	46 (64.8)	234 (72.5)	<40	16 (24.6)	60 (19.3)
Either Father/mother only	20 (28.2)	85 (26.3)	40-49	28 (43.1)	171 (55.0)
siblings/other relatives	5 (7.0)	4 (1.2)	50+	21 (32.3)	80 (25.7)

<b>Religion</b>			<b>Mothers' level of education</b>		
Christianity	66 (93.0)	305 (94.4)	None/Primary/Don't know	18 (27.7)	24 (7.7)
Islam/ Traditional	5 (7.0)	18 (5.6)	Secondary	22 (33.8)	117 (37.6)
<b>Ethnic group</b>			Higher	25 (38.5)	170 (54.7)
Yoruba	60 (84.5)	293 (90.7)	<b>Having other siblings</b>		
Igbo/ Hausa/Others	11 (15.5)	30 (9.3)	No	11 (15.5)	23 (7.1)
			Yes	60 (84.5)	300 (92.9)

VI - Visually impaired

NVI - Non-visually impaired

**Table 2: HIV and Pregnancy Prevention Knowledge**

<b>HIV Prevention Knowledge</b>			<b>PREGNANCY Prevention Knowledge</b>		
<b>VARIABLES</b>	<b>N=71</b>	<b>N=323</b>	<b>VARIABLES</b>	<b>N=71</b>	<b>N=323</b>
<b>Do you know anything one can do to avoid contacting HIV</b>			<b>Do you know any way a girl can avoid getting pregnant?</b>		
Yes	49 (69.0)	305 (94.4)	Yes	47 (66.2)	293 (90.7)
No	22 (31.0)	18 (5.6)	No	24 (33.8)	30 (9.3)
<b>Mention those things</b>			<b>Mention those ways</b>		
<b>Abstinence</b>			<b>Condom</b>		
Yes	43 (87.8)	272 (89.2)	Yes	41 ( 87.2)	226 (77.1)
No	6 (12.2)	33 (10.8)	No	6 (12.8)	67 (22.9)
<b>Faithfulness to partner</b>			<b>Pill</b>		
Yes	26 (53.1)	152 (49.8)	Yes	12 (25.5)	57 (19.5)
No	23 (46.9)	153 (50.2)	No	35 (74.5)	236 (80.5)
<b>Encouraging partner to be faithful</b>			<b>IUD</b>		
Yes	17 (34.7)	96 (31.5)	Yes	1 (2.1)	10 (3.4)
No	32 (65.3)	209 (68.5)	No	46(97.9)	283 (96.6)
<b>Avoid contaminated blood</b>			<b>Injectable/Depo Povera</b>		
Yes	30 (61.2)	155 (50.8)	Yes	6 (12.8)	3 (1.0)
No	19(38.8)	150(49.2)	No	41 (87.2)	290 (99.0)
<b>Using condom for every act of sexual intercourse</b>			<b>Diaphragm/Foam/ta blets/ Jelly/cream</b>		
Yes	27 (55.1)	149 (48.9)	Yes	0 (0.0)	9 (3.1)
No	22 (44.9)	156(51.1)	No	47 (100.0)	284 (96.9)
<b>Avoid sharing needle/sharp objects</b>			<b>Norplant</b>		
Yes	35 (71.4)	168 (55.1)	Yes	0 (0.0)	1 (0.3)
No	14 (28.6)	137 (44.9)	No	47 (100.0)	292 (99.7)
<b>Avoid commercial sex workers</b>			<b>Non penetrative sex</b>		
Yes	12 (24.5)	71 (23.3)	Yes	14 (29.8)	39 (13.3)
No	37 (75.5)	234 (76.7)	No	33 (70.2)	254 (86.7)
<b>Avoid casual sex</b>			<b>Male sterilization</b>		
Yes	3 (6.1)	39 (12.8)	Yes	1 (2.1)	17 (5.8)
No	46 (93.9)	266 (87.2)	No	46 (97.9)	276 (94.2)
<b>Avoid circumcision at</b>			<b>Female sterilization</b>		

Outcome Variable		Pregnancy Prevention Knowledge		HIV Prevention Knowledge	
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<b>unauthorized places</b>					
Yes	2 (4.1)	18 (5.9)	Yes	0 (0.0)	16 (5.5)
No	47 (95.9)	287 (94.1)	No	47 (100.0)	277 (94.5)
<b>Worry about contacting HIV?</b>			<b>Emergency contraception</b>		
Yes	11 (16.9)	112 (35.1)	Yes	1 (2.1)	3 (1.0)
No	54 (83.1)	207 (64.9)	No	46 (97.9)	290 (99.0)
<b>Have done anything to put you at risk of HIV?</b>					
Yes	7 (10.8)	34 (10.7)			
No	58 (89.2)	285 (89.3)			

VI - Visually impaired

NVI - Non-visually impaired

**Binary Logistics Regression Results showing the association between personal, parental and family characteristics and students’ knowledge of HIV and pregnancy prevention**

\*P<0.05 OR - Odds Ratio CI - Confidence Interval  
 Impaired NVI - Non-Visually Impaired

VI - Visually

Variables		VI		NVI		VI		NVI	
		OR	CI	OR	CI	OR	CI	OR	CI
	<b>MODEL 1</b>								
<b>Personal Characteristics</b>		OR	CI	OR	CI	OR	CI	OR	CI
Age	15	RC							
	16	4.178	0.659 - 26.466	1.214	0.442 - 3.334	3.788	0.516 - 27.639	1.536	0.461 - 5.118
	17-19	3.286	0.743 - 14.529	3.787	0.462 - 31.036	0.820	0.204 - 3.297	3.929	0.460 - 33.097
Sex	Male	RC							
	Female	0.251	0.072 - 0.875*	0.293	0.117 - 0.737*	0.348	0.107 - 1.129	0.464	0.146 - 1.470
Extra Curricular Activities	No	RC							
	Yes	1.795	0.531 - 6.060	1.302	0.545 - 3.112	1.487	0.459 - 4.815	1.191	0.410 - 3.459
School Sponsorship	Both Parents	RC							
	Either/Siblings/Others	0.441	0.122 - 1.584	1.409	0.549 - 3.615	0.776	0.231 - 2.613	0.663	0.239 - 1.839
Religion	Christian	RC							
	Islam/Others	0.423	0.051 - 3.495	0.728	0.144 - 3.677	0.991	0.089 - 11.084	0.609	0.068 - 5.413
Ethnic Group	Yoruba	RC							
	Igbo/Hausa/Others	0.842	0.178 - 3.992	0.383	0.117 - 1.251	0.616	0.132 - 2.873	0.940	0.109 - 8.106
Class at School	Primary/Junior Sec	RC							
	SS CLASS	3.801	0.819 - 17.651			3.383	0.841 - 13.601		
For the NVI Adolescents	SS 1	RC							
	SS2			2.114	0.768 - 5.815			2.252	0.798 - 6.352
	SS3			2.707	0.859 - 8.536			12.190	2.826 - 52.580

	MODEL 2								
<b>Parental and Family Characteristics</b>									
Father's Educ Attainment	Primary	RC							
	Secondary	0.839	0.062 - 11.431	1.878	0.348 - 10.125	0.424	0.027 - 6.735	0.416	0.039 - 4.404
	Post Secondary	1.615	0.097 - 26.798	1.024	0.234 - 4.481	2.255	0.105 - 48.434	0.767	0.074 - 7.881
Mother's Educ Attainment	Primary	RC							
	Secondary	2.188	0.180 - 26.564	1.672	0.390 - 7.157	2.847	0.237 - 34.147	1.668	0.262 - 10.581
	Post Secondary	0.663	0.050 - 8.880	2.184	0.531 - 8.985	0.578	0.036 - 9.326	4.161	0.607 - 28.523
Family Type	Monogamous	RC							
	Polygamous	1.614	0.189 - 13.813	0.729	0.260 - 2.044	0.141	0.014 - 1.438	1.025	0.241 - 4.356
Having Other Siblings	No	RC							
	Yes	23.351	0.910 - 599.406	0.984	0.203 - 4.770	22.761	1.132 - 457.685	1.157	0.121 - 11.078

The results of the model 2 of the binary logistics regression further showed that NVI adolescents whose fathers and mothers attained secondary and/or tertiary level education have higher odds of knowledge of pregnancy prevention, while those from polygamous families and those who have other siblings have lower odds. As regards the knowledge of HIV prevention, NVI adolescents whose mothers had up to tertiary level education have the highest odds of HIV prevention knowledge (OR=4.161; CI=0.607 - 28.523), while those from polygamous families and who have other siblings have slightly higher odds of HIV prevention knowledge than the reference categories.

### **Discussion:**

This study assessed the level of knowledge of visually impaired (VI) and non-visually impaired (NVI) in-school adolescents about methods of preventing HIV and unintended pregnancy and examined the influence of some personal, parental and family characteristics on their level of knowledge. The result showed that both the VI and the NVI adolescents have good knowledge about HIV and unwanted pregnancy prevention, although the VI are less knowledgeable about the two. This finding underscores the fact that school based Sexual and Reproductive Health for adolescents is one of the potent ways to raise awareness and increase the knowledge about preventing HIV and unwanted pregnancy among adolescents generally. This finding also corroborates the findings of Ajide and Balogun (2018), who found that about one third of secondary school adolescents interviewed had a good knowledge of HIV prevention. The lower knowledge among adolescents with visual impairment also showed the neglect of adolescents with disabilities generally, particularly those with visual impairment in sexual and reproductive health campaigns. Other personal characteristics influencing their level of knowledge about HIV and unwanted pregnancy were their age above 15year, their involvement in extracurricular activities and their class at school, as those in higher classes were more knowledgeable about HIV and pregnancy prevention than those in the lower classes. The direct relationship between adolescents' age and their knowledge of HIV and pregnancy prevention is an indication that adolescents acquire more knowledge about their SRH needs as they grow older.

This finding also agrees with the result of a study conducted by Akombi-Inyang et al. (2022) across the six geo-political zones of Nigeria, who identified increasing age as one of the predictors of adolescents' pregnancy in the country. Fathers' educational attainment above the secondary level and mothers' educational attainment at the secondary and tertiary levels directly influenced adolescents' knowledge of HIV and pregnancy prevention. Although family type gave a mixed result, having other siblings by the VI adolescents had a very strong influence on their knowledge of HIV and pregnancy prevention compared to NVI adolescents. This may not be out of order as having other siblings without visual impairment may be advantageous to them in acquiring knowledge about their sexual and reproductive health needs.

The influence of parental and family characteristics on the knowledge of HIV and pregnancy prevention is in tandem with the study earlier conducted by Alukagberie et al. (2023), who identified individual, family, communal and school based factors as influencing the knowledge of adolescents about pregnancy and HIV prevention. This study also found that adolescent girls were generally less likely to be knowledgeable about HIV and pregnancy

prevention, despite that girls are mostly affected by unintended pregnancies - one would have expected otherwise. This finding is in tandem with the findings of a study conducted earlier by Pharr et al. (2017), who identified that although adolescent boys are more engaged in risky sexual behaviours, females are often at more disadvantaged positions compared to the boys. This finding indicates that there is the need to pay close attention to the sexual and reproductive health needs of adolescent girls aside from the general efforts in reducing HIV and unintended pregnancies among adolescents. The relationship between parental and family characteristics and knowledge of HIV and pregnancy prevention is an indication that parental and family characteristics influence adolescents knowledge of HIV and pregnancy prevention in some ways and such cannot be ruled out. Furthermore, the findings also corroborates the findings of other studies that earlier identified family environment as a major factor influencing sexual behaviour of young people including adolescents (Gunawardena et al., 2019; Titiloye & Ajuwon, 2017; Tsala Dimbuene & Kuate Defo, 2012)

### **Conclusion**

This study therefore concludes that campaigns and awareness creation about preventing HIV and unintended pregnancies should not leave out adolescents with disabilities. Adolescent girls need to be more empowered with information about HIV and pregnancy prevention, to enable them make informed choices about their sexual and reproductive health needs. Parents and families must be part of the campaigns against the spread of HIV among adolescents generally.

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