Ife Social Sciences Review
Faculty of Social Sciences,
Obafemi Awolowo University Ile Ife, Nigeria
Journal homepage: www.issr.oauife.edu.ng/journal
ISSN:0331-3115 eISSN:2635-375X

Family Environment and Experience of Sexually Transmitted Infections among Young People in Sub-Saharan African Countries

Olufemi M. Adetutu
Department of Demography and Social Statistics, Faculty of Social Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria
oadetutu@oauife.edu.ng

Abstract

There is paucity of information on how family environment shapes sexual health outcomes of young people in sub-Saharan Africa countries. While most studies focused on the relationship between individual, household and community characteristics and sexual behaviour, there is limited information on a multi-country analysis of these phenomena. Hence, this study examined the influence of family environment on experience of sexually transmitted infections among young people in sub-Saharan Africa. This study used nationally representative secondary data sets of selected countries in SSA where sexual and reproductive health outcomes are deplorable. Information on sexual and reproductive health issues, socio-demographic, economic and other population-related characteristics were extracted from the data sets. The countries included Nigeria, Namibia, Malawi and DR Congo, representing each bloc of the sub-region. Results showed high prevalence of experience of sexually transmitted infections in DR Congo (9.3%). and lowest in Malawi (1.2%), multiple sexual partnerships was highest in DR Congo (55.7%) and lowest in Nigeria (22.5%) and condom use among sexually active young people was lowest in Malawi (11.0%) and highest in Namibia (50.7%). In Namibia, age (OR=4.25; C.I=1.24-14.54), primary education in Nigeria (OR=2.52; C.I=1.10-5.79), rural residence in Nigeria (OR=0.53; C.I=0.33-0.84), female-headed households in Namibia (OR=0.39; C.I=0.17-0.87), moderately deprived households in Nigeria (OR=2.59; C.I=1.31-4.73), multiple sexual partnerships in Nigeria (OR=2.24; C.I=1.42-3.51) and age at first sexual intercourse in DR Congo (OR=0.52; C.I=0.33-0.83) were significantly associated with experience of STIs among young people in SSA. Policies should focus on family-based interventions and strengthening of youth-friendly sexual and reproductive health interventions.

Keywords: Family environment, Experience of sexually transmitted infections, Multi-country, Sexual behaviour, Sub-Saharan Africa

Introduction

Available evidence has shown more than 30 different micro-organisms, such as bacteria, viruses and parasites are transmitted through sexual intercourse (Hughes & Sawleshwarkar, 2022). On a global scale, an estimated 374 million new infections occur annually with treatable illnesses like chlamydia, gonorrhoea, syphilis, and trichomoniasis (Sinka, 2024). Engaging in risky sexual practices is associated with sexually transmitted infections (STIs), including HIV, chlamydia, gonorrhoea, syphilis, among others (Centers for Disease Control and Prevention, 2023). Worse still, untreated sexually transmitted infections are responsible for a number of adverse health outcomes, such as

severe health complications, infertility, cancer, and mortality (World Health Organisation, 2023). Unprotected sexual intercourse can lead to unintended pregnancy, which has been documented to scuttle educational and employment opportunities, as well as mental health disorders among this vulnerable young demographic (Wadsworth, 2023).

Adolescence and emerging adulthood are a critical developmental stage characterised by significant physical, emotional, and social changes, including the exploration of sexuality (Bailey et al., 2024). Young people's sexual behaviour and its risk factors have gained significant traction in public health discourse, particularly in sub-Saharan Africa (Mogotsi et al., 2024; Govender et al., 2020; Kanyemba et al., 2023). Meanwhile, there is much evidence in the literature that shows risky sexual behaviour is responsible for negative sexual health outcomes of young people in sub-Saharan Africa countries (Bailey et al., 2024; Odimegwu et al., 2019). Risky sexual behaviour occurs most commonly during this developmental age period (Dias et al., 2020), and there is little evidence explaining why this is so in SSA countries. There is ample research in developed countries on young adulthood and the effects on sexual behaviour of extended education (especially among young women), late marriage, and delayed parenthood (Arnett, 2016). However, there is little research on factors associated with experience of sexually transmitted infections in sub-Saharan Africa countries.

Furthermore, young people's involvement in risky sexual behaviour has implication for their educational prospects (Seidu et al., 2020). Specifically, young women who experience young motherhood have poor socio-economic status (Ahinkorah et al., 2021). Poor young people have adverse health conditions, which have implications for socio-economic development of the sub-region. This is because young people constitute more than two-thirds of the total population in the sub-region (Olka et al., 2019). Added to this is the increased susceptibility to risky sexual practices owing to increased age at marriage. Available evidence shows that about 45% of young people in the sub-region initiate sexual intercourse before age 15 years (UNFPA, 2025). Most studies on sexual behaviour of young people focus on individual, household and community characteristics (Adedini et al., 2022; Govender et al., 2020; Dzomba et al., 2019; Odimegwu et al., 2019). These studies have contributed to evidence base and influenced policy interventions. Additionally, most of these studies are country-specific and considered contraceptive use, age at first sex, multiple sexual partnership and substance abuse as outcome variables. However, evidence is sorely missing on the direct outcomes of sexual behaviour, such as experience of sexually transmitted infections in SSA.

Among other characteristics of the context, the proposed study seeks to tease out information on the influence of sex of household, living arrangement and household wealth index on experience of sexually transmitted infections in SSA. Understanding the influence of the broad household characteristics on young people's sexual health outcomes will guide policy makers in the design of interventions aimed at improving the health of young people in SSA. Drawing on the theoretical foundation of theory of problem behaviour which suggests that risky sexual practices are responsible for poor sexual health outcomes, this study hypothesises that individual and household characteristics influence experience of sexually transmitted infections of young people in SSA. This study intends to inform policy formulation and interventions to address poor health outcomes of young people. This study will also provide baseline information on achieving the Sustainable Development Goal (SDG) target 3.3 that focuses on eradicating HIV and other related diseases by 2030. Findings from this study will allow health providers to better serve the sexual and reproductive health needs of young people in SSA.

This study provided answers to the following questions: What is the prevalence of sexually transmitted infections among young people in SSA countries? To what extent do individual and household factors influence the experience of STIs in SSA? What interaction exists between individual, household-level factors, number of sexual partnerships, condom use and experience

of STIs? It is against this background that this study focused on how family environment influenced sexually transmitted infections. Thus, this study considered the influence of individual, household and risky sexual behaviour on experience of sexually transmitted infections in the main regional blocs of SSA countries.

Methods

Study Area

The study used secondary data in some selected countries in sub-Saharan Africa, including Nigeria, Namibia, DR Congo and Malawi. These are some of the countries in SSA where risky sexual behaviour is very high among young people and also represent each of the blocs in SSA. Nigeria is one of the countries in sub-Saharan Africa, specifically West Africa. She has the largest population figure in Africa, which is over 200 million and seventh largest across the world (NPC & ICF International, 2019). Almost one-fourth of the population is women of childbearing age (15-49 years) and with 2.8% population growth rate per annum (NPC & ICF International, 2019). Nigeria is a country with myriad of population and public health problems. There is low contraceptive use among women in Nigeria and premarital sexual initiation in Nigeria was (15.8%) comparable to most countries in sub-Saharan Africa (NPC & ICF International, 2019). Nigeria has a young population profile with about 63% below age 25 years (NPC and ICF International, 2019). The four countries exhibited extremely young population age-structures and were selected to represent different cultural contexts. Malawi belongs to East, Namibia is in the South, Nigeria in the West and DR Congo in central Africa. The fertility rate among adolescents varied, although it was high in all four countries: 110 births per 1,000 women aged 15-19 years in Nigeria, 131 in Congo DR, 135 in Malawi, and 85 in Namibia (Wado et al., 2019). Available evidence shows between 20% and 59% of all births to mothers less than 20 years in these four countries were mistimed or unwanted (UNFPA, 2025).

Study Design

The study employed a cross-sectional research design using a quantitative technique. The 2013 Nigeria Demographic and Health Survey elicited information on demographic and health indicators both at the national and state levels including the Federal Capital Territory (FCT). The primary sampling unit (PSU) which was regarded as a cluster for the 2013 NDHS was defined on the basis of Enumeration Areas (EAs). The 2013 NDHS utilized the Enumeration Areas designed for Nigeria 2006 Population and Housing Census. Sample for the surveys was selected using stratified three-staged cluster design, with 904 clusters for the 2013 NDHS (NPC and ICF International, 2014). Data were gathered from 33,948 women aged 15-49 years in the 2013 NDHS. Furthermore, the 2013 NDHS disaggregated data by the six geo-political zones, the 36 States and Federal Capital Territory (FCT). The 2013 NDHS data made use of the sampling frame designed for the 2006 Population and Housing Census. The primary sampling unit (PSU) which was regarded as cluster for the 2013 NDHS was defined on the basis of Enumeration Areas (EAs) from the 2006 EA Census frames. Furthermore, the 2010 DHS from Malawi, the 2006-07 Namibia, the 2015 DR Congo DHS data sets were used for this study. The choice of these data sets was the availability of relevant variables. Data on experience of sexually transmitted infections and socio-demographic characteristics and sexual behaviour were extracted from the Demographic and Health Survey (DHSs) in the four selected countries.

For the purpose of this study, countries were divided along the traditional geographic blocs. East Africa was represented by Malawi, West Africa by Nigeria, South Africa by Namibia and Central Africa by DR Congo. Young adults aged 15-24 years were selected for the analysis. For this group, all young people that were sexually active and had given birth in the last 5 years prior the survey were selected for the study. This study focused on target population on young people aged 15-24 years who are unmarried, had at least secondary education and sexually active in the last 12 months prior the survey in the four selected countries. The unit of analysis is young adults aged 15-24 years. These countries were selected purposively because of high prevalence of sexual risk behaviour and huge proportion of young people. The weighted sample size from

each country included 9,302 in Nigeria, 6,480 in Malawi, 2,482 DR Congo and 3,195 in Namibia.

Outcome Variable

*The dependent variable***:** The dependent variable for this study was sexual health outcome. This was measured by experience of sexually transmitted infections: Experience of STIs was defined as whether young people had ever experienced STIs coded as 1 "yes" or 0 "no". This categorization has been used in previous studies (Ahinkorah et al., 2021; Seidu et al., 2020).

Independent Variables: The independent variables in this study included characteristics at individual and household levels. The selection of the independent variables was informed by the literature reviewed. The variables selected were those known to have influenced sexual behaviour of young people in previous studies (Somefun & Odimegwu, 2019; Amare et al., 2019). Age was presented in a numerical form before categorization into 15-19 "1" and 20-24 "2". Sex of young people is coded as 1 Male and 2 female. Level of education was defined as highest educational level of young people coded none (0), primary (1), Secondary (2), higher (3). Ethnic affiliation defined as ethnicity of young people coded (1) Hausa/ Fulani/ Kanuri / Yoruba (2) Igbo (3) Yoruba (4) others. Religion defined as respondent's religious affiliation coded (1) Catholic (2) Other (3) Christian (4) Islam

Household-Level Factors

Relevant variables were used in measuring household–level variables, including living arrangement, household headship, household size, and household wealth index computed from household facilities and items ownership by principal component analysis. These variables were defined as: marriage type: polygynous or monogamous coded (1) Polygynous (2) Monogamous. Sex of household headship is coded female or male. Family size described as number of households in numeric response members. Other control variables were media exposure, contraceptive use, multiple sexual partnerships and age at first sex and knowledge of contraceptive.

Data Analysis

The three levels of analyses were employed in this study. Univariate analysis was presented using percentage and frequency distribution of the respondents according to the background characteristics. Additionally, at the bivariate level, cross – tabulations of relevant variables were performed and Chi-square statistical test was employed to test the association between variables. The Chi-square test determined whether the associations were statistically significant or not. The Variance Inflation Factor (VIF) was be used to detect collinearity among the variables before proceeding to the third level of the analysis. A mean of 5 suggests extreme collinearity. Variables that showed collinearity were excluded from the next level of analysis. Third, at the multivariate analysis, further analyses were done to examine the relationship between experience of sexually transmitted infections and the selected independent variables. The variables selected were guided by the reviewed literature. At the multivariate level, binary logistic regression was applied to household factors and sexual behaviour by selected factors operating at the individual and household.

Ethical Consideration

This study used nationally representative data sets. No personal information of the respondents was identified in the data sets. Thus, confidentiality and anonymity of the study's respondents can be guaranteed. Apart from that, ethical permission for the use of the 2010 Malawi, 2015 DR Congo, 2006-07 Namibia and the 2013 Nigeria Demographic and Health Survey had already been obtained from ICF International, USA.

Results

This section presents the results of the data analyses. This chapter is divided into three sections. The first section presents the univariate analysis, while the second section presents the bivariate relationship between individual and household characteristics and risk of STIs. The third section is the multivariate analysis that presents the relationship between the individual,

household and other intervening variables using binary logistic regression. In the first section, the researcher presented a discussion of the descriptive evidence on all the relevant variables to provide a foundation for the quantitative results.

Percentage distribution of socio-demographic characteristics of the respondents

Table 1 shows demographic profile of the respondents. The vast majority of the respondents were in the age group 20-24 i.e., in all the selected countries, about 6 out of 10 respondents belonged to age group 20-24 while other belonged to age group 15-19. The distribution by level of education showed some variations across the countries. Greatest proportions of the respondents had no education in Nigeria and DRC (41% and 46% respectively) as opposed to Malawi where greatest proportion acquired primary education (69%) and Namibia with majority of respondents having secondary education (71%). In all the selected countries, the proportions of respondents having higher education were generally low. Respondents who belonged to the rural area constitute 6 out of 10 respondents in Nigeria and 8 out of 10 respondents in Malawi. On the other hand, over half of the respondents in Namibia and DRC (57% and 54% respectively) were urban residents. In terms of media exposure, most of the respondents had no contact with newspaper in most of the selected countries excluding Namibia where the at least 7 out of 10 respondents read newspaper every week. Those who listened to radio dominated in Nigeria, Malawi and Namibia (61%, 77% and 82% respectively) but in DRC, over half of the respondents did not listen to radio (56%). More than two-third (69%) of the respondents in Malawi had no contact with television every week, meanwhile half of the respondents in Nigeria (50%), close to two-thirds (59%) respondents in Namibia and well over two-third (68%) of the respondents in DRC did watch television every week.

With regard to household structure, greatest proportions of the respondents from Nigeria and Malawi hailed from monogamous as opposed Namibia and DRC where most respondents were groomed from polygamous family i.e. the results indicate that just over half (53%) of the respondents in Nigeria and two-thirds (66%) of those in Malawi belonged to monogamous family, while of the total respondents in Namibia, 8 out of 10 belonged to polygamous family and in DRC 6 out of 10 were from polygamous family. Also, majority of the respondents in Nigeria, Malawi and DRC belonged to households headed by males (85%, 76% and 79% respectively), but in Namibia most respondents belonged to households headed by females being 55%. Greatest proportions of the respondents from Nigeria and Malawi were found in households with medium deprivation (37% and 55% respectively), as opposed to Namibia and DRC where most respondents belonged to households with low deprivation (41% and 58% respectively).

Considering the sexual behaviour of the respondents, the results show that in Namibia and DRC, over half of the respondents had multiple sexual partners (55% and 56% respectively), but in Nigeria and Malawi those who had single sexual partners dominated with 78% and 65% respectively. When asked whether condom was used during the last sexual intercourse, the results indicate that 9 out of 10 respondents did not use condom in Nigeria and Malawi, and 8 out of 10 did not use condom in DRC, but in Namibia those who complied and those who failed to use condom were almost equal halves (51% and 49% respectively).

Moreover, the distribution of the respondents by age at first sexual intercourse shows that early sexual initiation is relatively high between age 15 and 19 years in all the countries compared to ages below 15 years and 20-24 years. When asked whether respondents had any STI in the last one year preceding the survey, those who said no dominated with 97% in Nigeria, 99% in Malawi, 96% in Namibia and 91% in DRC. However, a closer observation of those who were exposed to STIs among the four selected countries shows that the risk of STIs is greatest among the young people in DRC (9 %) followed by Namibia and Nigeria (4% and 3% respectively). Malawi ranks the country with the lowest incidence of STIs among young adults (1%). As regards the age at first birth, the data shows that most of the

respondents in Nigeria gave birth before reaching their 20th birthday. In Malawi and DRC, most respondents gave birth from 20 years upward (62% and 45%), whereas in Namibia greatest proportion (49%) of the respondents had no birth despite that they engage in sex. As earlier shown, a significant number of the young people in Namibia were using condom consistently.

Table 1: Percentage distribution of the respondents by background characteristics

Variables	Categories	Nigeria (2013)	Malawi (2010)	Namibia (2006-07)	DRC (2015)
Age	15-19	36.8	34.0	34.6	41.0
	20-24	63.2	66.0	65.4	59.0
Education	No education	41.4	6.8	2.3	45.7
	Primary	13.6	69.3	15.9	27.1
	Secondary	39.4	22.3	70.7	24.5
	Higher	5.5	1.5	11.1	2.8
Place of residence	Urban	33.6	18.7	56.8	53.8
	Rural	66.4	81.3	43.2	46.2
Media exposure					
Newspaper	No	82.1	63.9	28.2	79.2
	Yes	17.9	36.1	71.8	20.8
Radio	No	38.8	22.6	18.2	55.7
	Yes	61.2	77.4	81.8	44.3
Television	No	50.4	69.2	41.2	31.8
	Yes	49.6	30.8	58.8	68.2
Type of family	Monogamous	52.9	66.4	14.8	38.5
	Polygamous	47.1	33.7	85.3	61.5
Sex of head of household	Male	84.5	76.1	45.2	78.9
	Female	15.5	23.9	54.9	21.1
Household deprivation index	High	26.6	34.3	24.7	15.2
	Medium	37.1	54.7	34.8	27.3
	Low	36.3	11.0	40.6	57.6
Multiple sexual partners	No	77.5	64.5	44.8	44.4
	Yes	22.5	35.5	55.2	55.7
Condom use at sexual debut	Yes	11.3	11.0	50.7	20.4
	No	88.7	89.0	49.3	79.6
Age at first intercourse	<15	6.8	17.0	7.5	19.5
	15-19	30.4	54.4	78.8	56.9
	20-24	5.7	4.1	11.7	2.7
	Undecided	57.1	24.5	2.0	21.0
Risk of STIs	No	96.8	98.8	96.2	90.7
	Yes	3.2	1.2	3.8	9.3
	Total (N)	9302	6480	2482	3195

Source: Nigeria DHS 2013; Malawi DHS 2010; Namibia DHS 2006-07; DRC DHS 2015

Bivariate Analysis

Association between socio-demographic characteristics and experience of sexually transmitted infections

The age of the respondents is positively associated with the experience of STIs in all selected countries i.e., among the respondents; those in the age range 15-19 were less likely to contract STIs than those in the age range 20-24. Variation exists in terms of the level of education. In Nigeria, Namibia and DRC, respondents who had higher education witnessed the greatest experience of STIs (7%, 5% and 18% respectively) compared to those who were uneducated (1%, 3% and 9% respectively), but in Malawi respondents who had higher education were free from the experience of STIs and those

who had no education witnessed the greatest experience of STIs (3%). This perhaps shows that level of education is negatively associated with the experience of STIs particularly in Malawi unlike the other countries where increase in level of education did not seem to impact on the experience of STIs.

Also, with the exception of Malawi, the experience of STIs was greater among urban respondents than rural respondents in the selected countries including Nigeria, Namibia and DRC. In the case of Malawi, rural respondents were more predisposed to the experience of STIs than their urban counterparts. The data shows that media exposure was associated with decrease in the experience of STIs in Malawi as opposed to those who had exposure to newspaper; radio and television were less likely to contract STIs relative to those who had no exposure to these media. In other selected countries, exposure to the media is rather tantamount to greater experience of STIs because those respondents who had exposure to the media were more predisposed to the experience of STI than those who had no exposure.

The experience of STIs among the respondents varies by the type of family. The data shows that Nigeria and DRC had similar experience as well as Malawi and Namibia i.e., in Nigeria and Namibia, the experience of STIs was greater among respondents who belonged to polygamous family (4% and 10% respectively) as opposed to their counterparts from monogamous family (2% and 9% respectively). But in Malawi and Namibia, the experience of STIs was more predominant among respondents who belonged to monogamous family (1% and 6% respectively) than their peers from the polygamous family (0.8% and 3% respectively). Exposure to STI was greater in female-headed households particularly in Nigeria and Malawi where respondents from households headed by females (5% and 1.4% respectively) experienced greater experience of STIs compared to their peers from male-headed households (3% and 1.1% respectively). On the other hand, respondents from male-headed households (5% and 9.4% respectively) experienced greater experience of STIs in Namibia and DRC compared to those from households headed by females (3% and 8.8% respectively).

The level of household deprivation was negatively associated with the experience of STIs particularly in Nigeria and Namibia, whereas it is positively associated with the experience of STIs in Malawi and DRC. The greater the level of household deprivation, the lesser the experience of STIs in Nigeria and Namibia i.e., in Nigeria, the experience of STIs increased from 1.2% among respondents from high household deprivation to 4.3% among respondents with low household deprivation, and in Namibia, the experience of STIs increased from 1.4% among respondents from high household deprivation to 5.7% among respondents with low household deprivation. On the other hand, respondents from less deprived households experienced lower experience of STIs than respondents from highly deprived households in Malawi (0.4% and 1.3% respectively) and DRC (9.2% and 9.8% respectively).

Having multiple sexual partners was associated with greater experience of STIs in all the selected countries. The data shows that respondents who had no multiple sexual partners were less exposed to STIs than those who had multiple sexual partners in Nigeria (2% and 7% respectively), Malawi (1% and 2% respectively), Namibia (2% and 6% respectively) and DRC (7% and 11% respectively). In terms of use of condom at sexual debut, respondents who complied with the use of condom had greater experience of STIs than those who did not comply in all the selected countries with the exception of Namibia where respondents who did not use condom (4%) were more exposed to the experience of STIs than those who used condom at sexual debut (3.6%).

Table 2: Relationship between socio-demographic characteristics and experience of sexually transmitted infections

Variables	Categories	Nigeria (2013)			Malawi (2010)			Namibia (2006-07)			DRC (2015)		
		No	Yes	Chi-square	No	Yes	Chi-square	No	Yes	Chi-square	No	Yes	Chi-square
Age	15-19	97.8	2.2	12.2451***	99.3	0.7	4.3308**	97.6	2.4	4.2547**	91.6	8.4	0.9257
	20-24	96.3	3.7		98.6	1.4		95.4	4.6		90.1	9.9	
Education	No education	98.8	1.2	14.3156***	96.9	3.1	2.1856	97.23	2.8	1.0552	91.5	8.5	1.6063
	Primary	96.9	3.1		99.0	1.0		97.8	2.2		91.8	8.2	
	Secondary	95.2	4.8		98.8	1.2		95.9	4.1		89.1	10.9	
	Higher	93.0	7.0		100.0	0		95.4	4.6		81.9	18.1	
Place of residence	Urban	94.8	5.2	16.9266***	99.1	0.9	0.4262	95.0	5.0	11.0132***	90.0	10.0	1.1591
	Rural	97.9	2.1		98.8	1.2		97.7	2.4		91.7	8.4	
Media exposure													
Newspaper	No	97.5	2.5	34.2761***	98.8	1.2	0.1071	96.6	3.4	0.4633	91.5	8.5	3.9307**
	Yes	93.6	6.4		98.9	1.1		96.0	4.0		87.8	12.2	
Radio	No	98.5	1.5	23.5655***	98.6	1.4	0.3683	97.3	2.7	2.3469	91.5	8.5	1.6889
	Yes	95.8	4.2		98.9	1.1		95.9	4.1		89.8	10.2	
Television	No	98.4	1.6	29.4908***	98.7	1.3	0.9894	96.9	3.1	1.8532	92.0	8.0	1.5807
	Yes	95.3	4.7		99.1	0.9		95.7	4.3		90.2	9.8	
Type of family	Monogamous	97.8	2.2	23.8078***	98.6	1.4	3.0366	93.6	6.4	4.4372**	91.1	8.9	0.2118
	Polygamous	95.7	4.3		99.2	0.8		96.6	3.4		90.5	9.5	
Household head	Male	97.2	2.8	14.6473***	98.9	1.1	0.7938	95.0	5.0	4.5497**	90.6	9.4	0.1704
	Female	94.7	5.3		98.6	1.4		97.1	2.9		91.2	8.8	
Household deprivation	High	98.8	1.2	9.1946***	98.7	1.3	1.1123	98.6	1.4	7.9798***	90.2	9.8	0.0411
	Medium	96.5	3.5		98.7	1.3		96.6	3.4		90.9	9.1	
	Low	95.7	4.3		99.6	0.4		94.3	5.7		90.8	9.2	
Multiple sexual partners	No	97.8	2.2	42.1677***	99.1	0.9	3.1897	98.4	1.6	18.0762***	93.0	7.0	6.5962**
	Yes	93.5	6.5		98.4	1.6		94.4	5.6		89.0	11.0	
Condom use at sexual debut	Yes	94.6	5.4	13.1338***	98.2	1.8	1.3837	96.4	3.6	0.1387	89.4	10.6	1.1347
	No	97.1	2.9		98.9	1.1		96.0	4.0		91.1	8.9	
Age at first intercourse	<15	95.3	4.7	11.8075***	98.9	1.1	0.6207	95.5	4.5	0.4074	87.8	12.2	2.3309
	15-19	95.0	5.0		98.7	1.3		96.1	3.9		90.9	9.2	
	20-24	94.1	5.9		97.7	2.3		97.2	2.8		92.2	7.8	
	Undecided	98.2	1.8		99.1	0.9		97.2	2.8		93.0	7.0	
	Total (N)	9007	295		6404	76		2386	95		2899	296	

Source: Nigeria DHS 2013; Malawi DHS 2010; Namibia DHS 2006-07; DRC DHS 2015

Multivariate Analysis

The result in Table 3 showed age of respondents is significantly associated with experience of STIs only in Namibia. Respondents who are aged 20-24 years are 4 times more likely to experience STIs relative to those aged 15-19 years. With education, the results showed those with primary education in Malawi are 60% less likely to be exposed to STIs relative to the uneducated. In Nigeria, respondents in rural areas are 48% less likely to be exposed to STIs relative to those in urban area. Across the four countries family type and media exposure are not associated with the experience of STIs.

In Namibia, respondents with female headed household are 41% less likely to be exposed to the experience of STIs relative to the male headed households. For household deprivation, Nigeria and Namibia showed that respondents with average household possession are almost 3 times more likely to be exposed STIs relative to those with high household possession. Those who are rich in household wealth in Namibia are 7 times more likely to be exposed. Those who engaged in multiple sexual partnership in Nigeria showed experience of STIs for almost a 3-fold compared with those with single partner. Condom use at sexual debut was significant in Nigeria and Malawi. Results showed that respondents who did not use condom in Nigeria are three times more likely to be exposed to STIs relative to those who used. In Malawi, those who had not used condom are 78% less likely to be exposed to STIs relative to those who used. Age at first sexual intercourse was significantly associated with experience of STIs in DR Congo alone. The results showed respondents who had first sex at age 15 – 19 years are 48% less likely to be exposed to STIs relative to those who had first sex below age 15 years.

Table 3: Influence of socio-demographic characteristics on experience of sexually transmitted infections

Variables	Categories	Nigeria (2013)		Malawi (2010)		Namibia (2006-07)		DRC (2015)	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age	15-19	1		1		1		1	
	20-24	1.3836	0.8216-2.3300	1.1714	0.5594-2.4530	4.2478**	1.2407-14.5426	1.4504	0.8463-2.4856
Education	No education	1		1		1		1	
	Primary	2.5256	1.1013-5.7919	0.4016**	0.1667-0.9678	0.8843	0.1452-5.3852	0.8508	0.5159-1.4031
	Secondary	2.4773	1.0977-5.5906	0.3973	0.0962-1.6418	1.2869	0.2620-6.3222	1.1942	0.4689-3.0415
	Higher	0.1841	0.0204-1.6585	1		0.3596	0.0279-4.6344	1.2336	0.2131-7.1410
Place of residence	Urban	1		1		1		1	1
	Rural	0.5276***	0.3326-0.8371	1.0154	0.3373-3.0565	1.0748	0.5036-2.2938	0.8837	0.4774-1.6359
Media exposure									
Newspaper	No	1		1		1		1	1
	Yes	1.2773	0.7321-2.2287	1.0476	0.4126-2.6598	0.7170	0.3013-1.7062	0.5480	0.2215-1.3558
Radio	No	1		1		1		1	1
	Yes	1.2977	0.7298-2.3076	0.8124	0.4181-1.5785	0.8657	0.4291-1.7469	1.0072	0.6510-1.5585
Television	No	1		1		1		1	1
	Yes	0.9984	0.5961-1.6722	1.1024	0.4898-2.4809	1.2254	0.5721-2.6248	1.1821	0.7376-1.8946
Type of family	Monogamous	1		1		1		1	1
	Polygamous	1.2732	0.8039-2.0164	0.6653	0.3253-1.3606	0.8220	0.3645-1.8540	1.0453	0.6952-1.5717
Household head	Male	1		1		1		1	1
	Female	0.8793	0.4889-1.5812	1.7114	0.9087-3.2231	0.3960**	0.1789-0.8767	1.0477	0.5920-1.8541
Household deprivation	High	1		1		1		1	1
	Medium	2.4993***	1.3192-4.7348	1.2354	0.5851-2.6086	3.8478**	1.1563-12.8045	0.7142	0.3947-1.2923
	Low	1.4539	0.7417-2.8499	0.5852	0.1024-3.3435	6.3834***	1.7951-22.7002	0.6997	0.3504-1.3971
Multiple sexual partners	No	1		1		1		1	1
	Yes	2.2416***	1.4287-3.5172	1.5604	0.7741-3.1453	2.0095	0.7357-5.4887	1.2196	0.6851-2.1710
Condom use at sexual debut	Yes	1		1		1		1	1
	No	3.3195**	1.2935-8.5183	0.3271**	0.1227-0.8722	0.7333	0.3428-1.5685	0.7244	0.3613-1.4524
Age at first intercourse	<15	1		1		1		1	1
	15-19	1.6727	0.6199-4.5134	1.5044	0.6747-3.3543	1.0095	0.2887-3.5301	0.5278***	0.3327-0.8373
	20-24	2.2106	0.5752-8.4960	1.0674	0.1107-10.2968	0.4026	0.0540-2.9986	1	
	Undecided	1.7307	0.6695-4.4737	1.0560	0.3531-3.1579	1.4330	0.2279-9.0119	0.5420	0.2821-1.0402

Discussion

This study investigated relationship between individual and household factors, behaviour and experience of sexually transmitted infections in four selected sub-Saharan African counties where young people engage in risky sexual behaviour. Nigeria, Malawi, Namibia and DR Congo were selected to represent the regional blocs of countries in the sub-region. The study focused on the prevalence of sexually transmitted infections, as well as the influence of individual, household factors on experience of sexually transmitted infections, moderating the effect of sexual behaviour.

The results showed that in Namibia and DR Congo over half of the respondents had multiple sexual partners. In Nigeria, 90% of the respondents did not use condom during last sex and 80% did not use in Malawi. In the entire four countries, sexual debut started at very early ages, between 15 and 19 years. The prevalence of STIs is high in the four countries with the highest in DR Congo and lowest in Malawi. These results coalesce with previous studies in SSA, indicating a high tendency to experience sexually transmitted infections which resonated with preponderance of risky sexual behaviour evident in the sub-region (Odimegwu et al., 2019; Seidu et al., 2020). Sexual and behavioural change communication interventions should be strengthened in SSA to reduce unhealthy sexual practices among this demographic. Also, use of condom was highest on Namibia, which lends credence to better sexual and reproductive health indicators for young people in the Southern region of SSA (Kanyemba et al., 2023). This is as a result of robust sexual and reproductive health intervention and the high prevalence of HIV/AIDS in the region. The justifiable reason for high condom usage in Namibia could be for the prevention or protection against HIV transmission.

The results further showed that adolescents were less exposed to STIs compared to older young people. Prior studies have established that risky sexual behaviour occurs most frequently among emerging adults who experiment and explore their sexuality more often than the adolescents (Arnett, 2016; Dias, 2020). The results showed young people aged 20-24 years are more likely to engage in risky sexual behaviour compared to adolescents. A plausible reason for this is because they are more independent, relate more with peers and experiment with sex. This could be because older young people are transitioning into adulthood and most often in the permissive environment and relative freedom of higher institutions. More institution-focused youth friendly sexual and reproductive health interventions should be implemented in tertiary institutions and among out-of-school in similar age bracket.

In Nigeria, DR Congo and Namibia, educated young people were more exposed to STIs unlike in Malawi. Results showed education was significant with sexually transmitted infections and female educated respondents are more exposed to STIs. This result is in line with past studies (Ahinkorah et al., 2021; Wadu et al., 2020). The results also agree with previous studies which argue that risky sexual behaviour is more predominant among students in tertiary institution and secondary schools owing to western ideas, laxity in the education system and infiltration of the culture of sexual sanctity in the social media space (Dzomba et al., 2019; Vongxay et al., 2019).

With the exception of Malawi, those in urban areas were more exposed to STIs. The high tendency to experience STIs in the urban environment is logical owing to the promotion of sexual immorality and decadence of reverence for sexuality of human. The results showed urban dwellers are more exposed to risky sexual behaviour and outcomes. This may be in contrast to the hypothesis that positive sexual behaviour is prominent in an environment where there are robust sexual awareness programmes. The cosmopolitan environment in the urban culture is couched in western sexual culture which promotes transactional sex, indecent dressing, coupled with limited parental monitoring and control. In the urban environment, the cost of living is prohibitive and parents hustle to make ends meet. Thus, there is an absence of father and mother-figure to a reasonable extent. The policy implication is for government and other relevant

stakeholders to promote protective sex and encourage parental monitoring and control.

The experience of STIs was higher for respondents in the polygamous setting in Nigeria. This result is in tandem with a previous study which found that children in a polygamous setting experience limited parental monitoring and supervision. Most often, wives in such settings engage in needless rivalry to the detriment of their children (Amare et al., 2017; Olka et al., 2019). The plausible reason could be financial challenges which exposure young people early to sexual activities for survival. There is growing evidence of information linking financial challenges to transactional sex among young people (Govender et al., 2020; Mogotsi et al., 2024). Youth empowerment must be encouraged in SSA, especially skill acquisition and cash transfer to provide sustainable livelihood. Those with female headed households were exposed to the risk of STIs in Nigeria and Malawi. Studies have documented evidence on the influence of father-figure in controlling problem behaviour in SSA. Most female-headed households are formed owing to separation or divorce of couples. This has profound implications on the upbringing of the children. Most often, a female-headed household depicts financial dependence of the man, which may limit the support and financial obligations of the father. This situation often compromises the authority of the father, and as such children in such context may engage in sexual immorality and be wayward. The poorest young people were less exposed to STIs in Nigeria and Namibia. In some situations, lack of resources or material things may be a motivation to exhibit positive behaviour by young people. The children of the poor may be resilient, exhibit self-discipline and shun sexual intercourse before marriage. Having multiple sexual partners was associated with STIs in all the counties.

Multiple sexual partnership has been document as a key driver of sexually transmitted infections, including HIV/AIDS (Odimegwu et al., 2019; Somefun & Odimegwu, 2019). The results showed a substantial number of respondents had multiple sexual partners refused to use condom in their last sexual intercourse. This is consistent with previous studies (Seidu et al., 2020; Dias, 2020). The plausible reason engagement in sexual intercourse with more than one sexual partner increase the surge in STIs is obvious Chersich et al., 2018). Most casual sexual intercourse with multiple partners is often unprotected and a potent risk factor of STIs across the globe. Government should strengthen youth friendly sexual and reproductive health interventions which promote abstinence and single sexual partnership.

Other results showed variations across the countries with respect to the explanatory and intervening variables. The results showed that respondents exposed to mass media did not engage in sexual risk behaviour. The result is similar to other studies in SSA where awareness about sexual programmes in urban area discouraged young people from sexual permissiveness (Odimegwu et al., 2019; Kanyemba et al., 2023). Wealth status was found to be a determinant of condom use. These results suggest that programmes and interventions should focus more on the young people who are relatively independent, and family planning providers must look beyond personal characteristics. The results support the hypothesis that negative sexual behaviour impacts poor sexual health outcomes such as STIs. The results also support the hypothesis that individual and household factors such as age, education and household head are predictor of sexual health outcomes of young people.

This study has some strengthens and limitation. The study employed large and nationally representative secondary data sets, which have robust methodological techniques. Also, the presented a novel idea by researching sexual health outcomes from a multi-country perspective, and as such showed vividly cross—cultural picture of predictors of sexually transmitted infections in the main SSA blocs. However, there are possible limitations of the study. First, one cannot completely rule out the tendency of young people giving socially desirable information on sexual behaviour. Another key limitation of the data and by extension the study is that sex outside marriage may be underreported. The cross-sectional nature

of the study may be limited by temporal sequence or ordering of the exposure variables and the outcome, which is feasible in a longitudinal study. Nonetheless, this study focused on association among variables but not causality. Future research should focus on trend analysis of predictors of experience of sexually transmitted diseases among young people in SSA in order to tease out information on changes in experience of STIs over a period of time.

This study concluded that sexual risk behaviour and experience of STIs are largely poor in the SSA countries. Variations also exist across countries with respect to how individual and familial factors influence experience of sexually transmitted infections among young people in SSA. Familial factors are significant with sexual health outcomes but varied across countries. Research should focus more on youth empowerment, promotion of youth friendly sexual and reproductive health programmes, as well as interventions which enhance parental monitoring and control. Condom use and awareness programmes should be put in place to forestall the preponderance of sexually transmitted infections among young people in SSA

References

Ahinkorah BO, Kang M, Perry L, Brooks F, Hayen A. (2021). Prevalence of first adolescent pregnancy and its associated factors in sub-Saharan Africa: a multi-country analysis. PLoS ONE. 2021;16(2): e0246308. https://doi.org/ 10.1371/journal.pone.0246308.

Amare H, Azage M, Negash M, Getachew A, Desale A, Abebe N. (2017). Risky sexual behavior and associated factors among adolescent students in Tana Haik high school, Bahir Dar, Northern Ethiopia. Int J HIV/AIDS Prev Educ Behav Sci. 2017;3(4):41–7.

Arnett, J.J. (2016). Conceptions of the transition to adulthood among emerging adults in American ethnic groups. *Ne\v Directions in Child and Adolescent Development, WO,* 63-75.

Bailey, C., Shaw, J., & Harris, A. (2024). Adolescents and sexual assault: A critical integrative review. *American Journal of Community Psychology*.

Chersich MF, Wabiri N, Risher K, Shisana O, Celentano D, Rehle T, Evans M, Rees H. Contraception coverage and methods used among women in South Africa: a national household survey. SAMJ South Afr Med J. 2017;107(4):307–14.

Chersich, M. F, Luchters, S., & Reid, S. R. (2018). Socio-economic and demographic factors influencing sexually transmitted infections among women. J Sex Heal. (2018).

Dias S, Gama A, Loos J, Roxo L, Simões D, et al. (2020). The role of mobility in sexual risk behaviour and HIV acquisition among sub-Saharan African migrants residing in two European cities. PLoS ONE. 2020;15(2): e0228584. https://doi.org/10.1371/journal.pone.0228584

Dzomba A, Tomita A, Govender K, Tanser F. (2019). Effects of migration on risky sexual behavior and HIV acquisition in South Africa: a systematic review and meta-analysis, 2000–2017. AIDS Behav. 2019; 23:1396–430. https:// doi.org/10.1007/s10461-018-2367-z.

Govender, D., Naidoo, S., & Taylor, M. (2020). "My partner was not fond of using condoms and I was not on contraception": understanding adolescent mothers' perspectives of sexual risk behaviour in KwaZulu-Natal, South Africa. *BMC Public Health*, *20*(1). https://doi.org/10.1186/s12889-020-08474-2

Hughes, Y., & Sawleshwarkar, S. (2022). Global Epidemiology of Selected Sexually Transmitted Infections. *Global Epidemiology of Selected Sexually Transmitted Infections*, 25–35. https://doi.org/10.1002/9781119826781.ch2

Kanyemba, R., Govender, K., Dzomba, A., Mashamba, T. P., & Mantell, J. E. (2023). HIV Focused Sexual Risk-Reduction Interventions Targeting adolescent boys and Young Men in Sub-Saharan Africa: A scoping review. *AIDS and Behavior*, *27*(10), 3356–3391. https://doi.org/10.1007/s10461-023-04054-8

Mogotsi, M., Govender, S., Nel, K., & Govender, I. (2024). Sexual Risk-taking Behaviours amongst Rural Adolescent Boys in a Province in South Africa: A Qualitative Study. *˜the*

œOpen Public Health Journal, *17*(1). https://doi.org/10.2174/0118749445278672240220114723

National Population Commission and ICF International. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville: NPC and ICF International; 2019.

Odimegwu C, Somefun O, Chisumpa V. (2019). Regional diferences in positive sexual behaviour among youth in sub-Saharan Africa. J Biosoc Sci. 2019; 51(2):254–72. https://doi.org/10.1017/S002193201800010X

Olika AK, Kitila SB, Terfa YB, et al. (2019). Contraceptive use among sexually active female adolescents in Ethiopia: trends and determinants from national demographic and health surveys. Reprod Health. 2019; 18:104. https://doi. org/10.1186/s12978-021-01161-4.

Seidu AA, Ahinkorah BO, Dadzie LK, et al. (2020). A multi-country cross-sectional study of self-reported sexually transmitted infections among sexually active men in sub-Saharan Africa. BMC Public Health. 2020; 20:1884. https://doi.org/10.1186/s12889-020-09996-5.

Sinka, K. (2024). The global burden of sexually transmitted infections. *Clinics in Dermatology*, *42*(2), 110–118. https://doi.org/10.1016/j.clindermatol.2023.12.002

Smolarczyk K, Mlynarczyk-Bonikowska B, Rudnicka E, Szukiewicz D, Meczekalski B, Smolarczyk R, et al. (2021). The impact of selected bacterial sexually transmitted diseases on pregnancy and female fertility. Int J Mol Sci. (2021) 22(4):2170. doi: 10.3390/ijms22042170

United Nations Population Fund (UNFPA) and ICPD25 (2025). Sexual and Reproductive Health and Rights: an essential element of Universal Health Coverage. Integrated defnition of sexual and reproductive health and rights. https://www.unfpa.org/sites/default/fles/pub-pdf/UF_SupplementAndUniversalAccess_30-online.pdf.

Vongxay V, Albers F, Thongmixay S, Thongsombath M, Broerse JEW, et al. Sexual and reproductive health literacy of school adolescents in Lao PDR. Odimegwu and Ugwu Reproductive Health (2022) 19:119 Page 17 of 18 PLoS ONE. 2019;14(1):e0209675. https://doi.org/10.1371/journal.pone.0209675.

Wado YD, Bangha M, Kabiru CW, Feyissa GT. (2020). Nature of, and responses to key sexual and reproductive health challenges for adolescents in urban slums in sub-Saharan Africa: a scoping review. Reprod Health. 2020; 17:149. https://doi.org/10.1186/s12978-020-009985.

Wadsworth, S. (2023). *Sexual health education scope and sequence* (ScholarWorks@BGSU). https://scholarworks.bgsu.edu/honorsprojects/966

World Health Organization (WHO) (2022). Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022–2030 (2022).

World Health Organization (WHO). (2022). Sexually transmitted infections: Policy brief on social determinants and health equity (2022).

World Health Organization, & The World Bank. (2023). *Tracking universal health coverage: 2023 global monitoring report*. World Health Organization.

Zgambo M, Kalembo FW, Mbakaya BC. Risky behaviours and their correlates among adolescents living with HIV in sub-Saharan Africa: a systematic review. Reprod Health. 2018; 15:180. https://doi.org/10.1186/s12978-018-0614-4.