

Prevalence and Determinants of Early Sexual Debut Among Adolescents and Young Adults in Sub-Saharan Africa: Examining the Role of Digital Access and Sociodemographic Factors in a Multi-Country Cross-Sectional Study

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Abstract

Background

Early sexual debut is a major public health concern associated with increased risks of sexually transmitted infections and unintended pregnancies. With the rapid expansion of digital media, adolescents and young adults (AYAs) may experience shifts in sexual knowledge and behaviors. However, empirical evidence on the relationship between media exposure and early sexual debut in sub-Saharan Africa (SSA) remains limited. This study assessed the prevalence of early sexual debut and examined the associations between digital access, sociodemographic characteristics, and early sexual debut among adolescents and young adults (AYAs) in Sub-Saharan Africa (SSA).

Methods

A multi-country cross-sectional study was conducted among 3,728 AYAs aged 15–24 years with lifetime sexual experience, sampled from Health and Demographic Surveillance System (HDSS) households and school rosters to ensure proportional representation. Data on sociodemographic characteristics, digital access, and sexual behaviors were collected using structured questionnaires and analyzed using SPSS version 28. Descriptive statistics and binary logistic regression were used to identify factors associated with early sexual debut.

Results

Among AYAs aged 15–24 years with lifetime sexual experience, the prevalence of early sexual debut was 7.4% (95% CI: 6.6%–8.3%). Initial analysis suggested a protective association between WhatsApp or Telegram ownership and early sexual debut, but this was not significant after adjustment. In multivariable analysis, AYAs in Ghana (aOR = 4.422, 95% CI: 2.047–9.552, $p < .001$), Nigeria (aOR = 5.608, 95% CI: 2.000–15.721, $p = .001$), Tanzania (aOR = 3.631, 95% CI: 1.740–7.578, $p = .001$), and Uganda (aOR = 2.087, 95% CI: 1.034–4.212, $p = .040$) had significantly higher odds of early sexual debut compared to Burkina Faso. Adolescents aged 15–19 years (aOR = 4.393, 95% CI: 3.311–5.827, $p < .001$) and males (aOR = 2.910, 95% CI: 2.175–3.894, $p < .001$) were more likely to report early sexual debut. Not living with a male guardian was associated with reduced odds (aOR = 0.430, 95% CI: 0.284–0.652, $p < .001$), whereas perceived low household socioeconomic status increased the likelihood (aOR = 1.909, 95% CI: 1.308–2.786, $p = .001$).

Conclusion

Early sexual debut among AYAs is influenced by country-specific and sociodemographic factors, with heightened vulnerability among younger adolescents, males, and socioeconomically disadvantaged

groups. Context-specific interventions addressing structural determinants, household dynamics, and the cautious use of digital platforms are essential to delay sexual initiation in SSA.

Background

Early initiation of sexual activity among Adolescents and Young Adults (AYAs) in Sub-Saharan Africa (SSA) remains a major public health challenge with far-reaching consequences. Early sexual debut, commonly defined as sexual intercourse before the age of 15, is associated with increased risks of Human Immunodeficiency Virus (HIV) and other sexually transmitted infections, unintended pregnancies, unsafe abortions, and school dropout(1, 2). These outcomes often persist into adulthood, limiting educational and economic opportunities and reinforcing intergenerational cycles of poverty. Evidence further suggests that early sexual debut is linked to subsequent engagement in other risk behaviors, including nicotine and marijuana use, as well as long-term physical health problems(3).

Adolescence is a critical developmental stage marked by rapid biological, cognitive, and social changes. Neurodevelopmental research demonstrates that the adolescent brain undergoes substantial structural and functional reorganization, particularly in regions governing decision-making, impulse control, and social cognition(4). The development of the “social brain,” which underpins self-awareness and social interaction, is especially prominent during this period(5). Despite these advances, adolescence has received comparatively limited attention as a sensitive period for romantic and sexual development(5). Many AYAs lack a full understanding of the potential consequences of sexual relationships, underscoring the importance of guidance and supportive environments in fostering informed decision-making(6).

The prevalence of early sexual debut varies across regions and populations. A large multi-country study across 50 countries reported that 14.2% of adolescents aged 12–15 years had initiated sexual activity early, with a higher prevalence among boys (19.5%)(7). Regionally, the African region reported a prevalence of 16.6%, higher than Southeast Asia (5.3%), but lower than the Americas (18.4%)(7). In contrast, analyses of Demographic and Health Survey data among female adolescents and young adults in sub-Saharan Africa reported a substantially higher prevalence of early sexual debut (46.39%), nearly sevenfold greater than that observed in this study (1). This discrepancy may be explained by differences in study populations and scope, as the DHS analysis focused exclusively on females, whereas the current study employed a different sampling frame and population composition. Country-specific studies further highlight heterogeneity within the region, with reported prevalence ranging from 17.4% in Tanzania(8) to 18.9% in Mozambique(2).

In SSA, the consequences of early sexual debut may be more severe because of high HIV prevalence and stronger social repercussions, such as stigma and school dropout, especially for girls. AYAs in SSA face intersecting vulnerabilities, including low sexual and reproductive health literacy and restricted family communication(9, 10), which increases reliance on peers and social media for information, sources that may perpetuate misinformation and risky sexual norms.

Consistent predictors of early sexual debut include younger age, male sex, and lower educational attainment(1, 2, 11, 12). School attendance is frequently protective, while being out of school significantly elevates risk. Household structure also plays a critical role; AYAs living without biological parents or under the care of single or male guardians face greater vulnerability(2). These individual-level factors interact with broader socio-economic and community-level determinants, including poverty, peer influence, and prevailing social norms.

Socio-economic disadvantage is a particularly salient driver of early sexual debut in SSA. AYAs from low-income households are disproportionately exposed to material deprivation, which may increase engagement in transactional or coerced sexual relationships(1). In such contexts, early sexual activity may be linked to survival strategies, undermining AYAs' health, autonomy, and dignity. Attitudes and normative beliefs also matter; AYAs who perceive early sexual debut as acceptable are significantly more likely to initiate sex early(12).

At the same time, SSA is experiencing rapid growth in adolescent access to smartphones and social media. Evidence from Zanzibar demonstrates high levels of mobile phone dependency, with AYAs often prioritizing airtime and data over basic needs(13). This digital expansion presents both opportunities and risks. Responsible use of social media can enhance sexual health literacy and promote safer behaviors, while misuse increases exposure to sexually explicit content and exploitation(14).

As parental influence declines during adolescence, peer and media influences become increasingly prominent(15). Smartphones now play a central role in shaping AYAs' sexual attitudes and behaviors. Without appropriate guidance and regulation, the potential benefits of digital engagement may be overshadowed by harmful exposures(16). Nonetheless, evidence indicates that carefully designed mobile-based interventions can effectively engage AYAs and promote healthier sexual behaviors(17–19).

Although media exposure has been identified as an important correlate of early sexual debut, much of the existing evidence is derived from single-country studies, limiting cross-contextual understanding(1, 2, 12). Given the diversity of social and cultural contexts in SSA, multi-country analyses are needed to better understand how digital access and sociodemographic factors jointly influence early sexual initiation. Addressing this gap, the present study examined the association between digital access and sociodemographic determinants of early sexual debut among AYAs across multiple Sub-Saharan African countries. As there is potential for social media platforms to both promote SRH literacy and increase exposure to risky content, we hypothesized that digital platform ownership would be associated with early sexual debut, but that the direction of this association would depend on the nature of use and the sociodemographic context.

Methods

Study design and setting

This study employed a multi-country cross-sectional design using baseline data from the Research Network for the Design and Evaluation of Adolescent Health Interventions and Policies in Sub-Saharan Africa (DASH) <https://www.dash-rhissa.org/>, a multi-site surveillance project. The analysis was based on the first survey round, which enrolled approximately 2,000 adolescents and young adults (AYAs) aged 10–24 years per site across several Sub-Saharan African countries. The study included two rural sites, Ningo Prampram/Shai Osudoku in Ghana and Iganga/Mayuge in Uganda, and five urban sites: Ibadan/Lagos in Nigeria (school-based), Addis Yeka Urban HDSS in Ethiopia, Nouna HDSS in Burkina Faso, Usinga HDSS in South Africa, and Dodoma HDSS in Tanzania. Collectively, these Health and Demographic Surveillance System (HDSS) sites span rural, semi-urban, urban, community-based, and school-based contexts, enabling comparative adolescent health research across diverse social and geographic settings.

Study population

Participants aged 10–24 years who were residents of the study area and intended to remain residents for the study duration and who provided written informed consent were enrolled in the DASH study. Those with chronic illnesses or communication difficulties, as well as individuals not meeting the age or residency criteria, were excluded.

Sampling and Sample Size

In the community-based sites, AYAs aged 10 to 24 years were recruited through household sampling, whereas recruitment in the school-based site was conducted through schools. Each site implemented a sampling strategy that encompassed the entire geographical catchment area to ensure representativeness of the study population.

The overall size of the HDSS populations (all ages) varies from 50,000 to 200,000 across partner communities. To investigate health behaviors, burdens, and the effects of multiple interventions, over 2,000 AYAs per site were enrolled at baseline, yielding a total sample of about 14,000 across seven countries.

For this study, age-eligible participants were randomly selected from all participating communities using household- and individual-level sampling frames derived from existing HDSS records. Sampling was stratified by geographic units within each HDSS site and by age and sex categories (males and females aged 10–14, 15–19, and 20–24 years), and a multi-stage random sampling approach was applied across sites. Households containing at least one adolescent or young adult were randomly selected from the sampling frame. In households with more than one eligible adolescent or young adult, one individual was randomly selected for participation. The first 2,000 randomly selected individuals were contacted to seek informed consent for study participation. To account for potential non-response or refusals at baseline, an additional oversample of 300 AYAs was generated and contacted as replacements where necessary.

Before the baseline survey, the questionnaire and administration procedures were pilot-tested among 60 AYAs per site (20 from each age group). These pilot participants were randomly selected from HDSS databases, and their data were excluded from the main study.

Data Collection Methods and Tools

The study partners developed a survey assessing key AYAs' health indicators across 12 domains, including socio-demographics, hygiene, nutrition, social media use, mental health, violence, substance use, sexual and reproductive health, and healthcare utilization, covering the main risk factors for preventable morbidity and mortality (Supplementary file 1). Additionally, anthropometric measurements (height and weight) and biomarker assessment (blood hemoglobin levels) were collected during each survey round. Interviews were conducted and lasted 60–90 minutes.

The survey was developed using items from previous Africa Research, Implementation Science, and Education (ARISE) network studies(20) and refined through a multi-stage collaborative process that drew on international frameworks and AYAs' health surveys. Trained interviewers conducted survey rounds in households and schools, respectively, administering questionnaires. Surveys were translated into local languages, and data were collected electronically, uploaded to secure servers, and monitored by project data managers for quality. Research staff were trained in consent, enrollment, interviews, and measurement procedures, emphasizing participant rights and confidentiality.

Data Extraction for the current study

The original DASH Project baseline dataset comprised 14,500 AYAs. Of these, 10,214 were excluded, as they had not initiated sexual activity. From the remaining 4,286 AYAs, 239 were further excluded because they could not recall the timing of their first sexual encounter. Among the 4,047 AYAs left, an additional 272 were excluded, as they declined to disclose their sexual status. Ultimately, a total of 3,775 AYAs were eligible and included in the final analysis (Fig. 1).

INSERT FIGURE 1 HERE

Figure 1: Data extraction flow chart

Study Variables

In this study, early sexual debut was the dependent variable, and was defined as having had first sexual intercourse before the age of 15 years. AYAs who reported initiating sexual intercourse before their 15th birthday were coded as 1, while those who initiated sexual intercourse at age 15 or later were coded as 0.

The primary independent variables in this study were digital access and AYAs' socio-demographic characteristics. Digital Access was categorized into three groups: [I] AYAs who owned a mobile phone or had access to someone else's phone, [II] AYAs who owned a WhatsApp account on their phone, and [III] AYAs who owned a Telegram account on their phone. The socio-demographic characteristics included country of origin, type of HDSS site, age group, sex, schooling status, religion, Work participation status, perceived household subjective socioeconomic status, and living arrangements.

Data analysis

Data were analyzed using SPSS software version 28. Descriptive statistics were computed to summarize participants' socio-demographic characteristics and the distribution of key study variables using frequencies and percentages for categorical variables. Variables with $p < 0.05$ in bivariate analysis were included in the multivariable logistic regression model. The goodness of fit for the multivariable model was assessed using the Hosmer-Lemeshow test with the SPSS analysis (21). The results indicated a good fit for the data: $X^2 (8) = 13.602$, $p = 0.093$.

Binary logistic regression was used to examine the association between media exposure and early sexual debut. Crude (unadjusted) and adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were estimated. Variables with a p-value of less than 0.02 in bivariate analysis were included in the multivariable model. A significance level of $p < 0.05$ was considered statistically significant in the final analysis.

Results

Social Demographic Characteristics of Study Participants

The study population was largely recruited through community-based data collection sites (96.3%). Most participants were aged 20–24 years (71.8%), not currently enrolled in school (72.5%), and had engaged in income-generating activities within the past 12 months (65.6%). A substantial proportion had both parents alive (74.0%) and reported low perceived socioeconomic status (77.1%). Access to mobile technology was high, with 81.6% of participants owning or having access to a mobile phone. However, uptake of specific social media platforms remained limited, as the majority did not own a WhatsApp account (66.5%) or a Telegram account (88.1%) (Table 1).

Table 1
Social Demographic Characteristics of AYAs With Lifetime Sexual Experience (n = 3728)

Variables	Frequency (n)	Percent (%)
<i>Country name</i>		
Burkina Faso	384	10.3
Ethiopia	127	3.4
Ghana	588	15.8
Nigeria	137	3.7
South Africa	711	19.1
Tanzania	1085	29.1
Uganda	696	18.7
Types of HDSS sites		
School based	137	3.7
Community based	3591	96.3
Age Categories		
15–19 years	1052	28.2
20–24 years	2676	71.8
Sex of the respondent		
Male	1674	44.9
Female	2054	55.1
Currently in a school, college, or vocational institute		
No	2702	72.5
Yes	1026	27.5
Religion		
Catholic	593	15.9
Protestant	1660	44.5
Orthodox	337	9
Muslim	645	17.3
Traditional faiths	290	7.8

Variables	Frequency (n)	Percent (%)
<i>Country name</i>		
Others	203	5.4
Engaged in any work in the past 12 months		
No	1284	34.4
Yes	2444	65.6
Parents alive		
Both parents alive	2757	74
Mother alive	641	17.2
Father alive	198	5.3
Others	132	3.6
Currently live with my mother		
No	1777	47.7
Yes	1951	52.3
Currently live with my father		
No	2406	64.5
Yes	1322	35.5
Currently live with other male guardians		
No	3399	91.2
Yes	329	8.8
Currently live with other female guardians		
No	3263	87.5
Yes	465	12.5
Currently live with siblings		
No	2587	69.4
Yes	1141	30.6
Currently live by myself		
No	3393	91
Yes	335	9

Variables	Frequency (n)	Percent (%)
Country name		
Perceived subjective social status		
Low	2876	77.1
High	852	22.9
Own a mobile phone or can access one		
No	685	18.4
Yes	3043	81.6
Own a WhatsApp account		
No	2480	66.5
Yes	1248	33.5
Own a Telegram account		
No	3285	88.1
Yes	443	11.9

INSERT Table 1 HERE

Early Sexual Debut

Among AYAs aged 15-24years with lifetime sexual experience, 276 (7.4%) reported initiating sexual intercourse before their 15th birthday, while the majority, 3,452 (94.6%), initiated at age 15 or older. Among AYAs who reported early sexual debut, substantial country-level variation was observed. In Ethiopia, none of the AYAs with lifetime sexual experience reported initiating sexual intercourse before the age of 15 years, whereas Tanzania exhibited the highest prevalence, with 11.2% (Fig. 2).

INSERT FIGURE 2 HERE

Figure 2: Early Sexual Debut (%) by Country (AYAs 15–24)

The Relationship between AYAs' Characteristics and Timing for Sexual Debut

Chi-square (χ^2) analysis demonstrated significant relationships between early sexual debut and several variables, including country of residence ($\chi^2 = 44.877$, $p < 0.001$), age category ($\chi^2 = 167.492$, $p < 0.001$), sex of the respondent ($\chi^2 = 71.138$, $p < 0.001$), and religion ($\chi^2 = 22.177$, $p < 0.001$). Significant relationships were also observed for selected living arrangements, including co-residence with a father ($\chi^2 = 4.446$, $p = 0.035$), living with another male guardian ($\chi^2 = 10.427$, $p = 0.001$), and living with siblings

($\chi^2 = 5.032$, $p = 0.025$). Socioeconomic status also demonstrated a significant relationship with early sexual debut ($\chi^2 = 13.957$, $p < 0.001$). Additionally, ownership of a WhatsApp account ($\chi^2 = 12.241$, $p < 0.001$) and a Telegram account ($\chi^2 = 10.543$, $p = 0.001$) also showed a significant relationship with early sexual debut (Table 2).

Table 2
The Relationship between Adolescents' Characteristics and Timing for Sexual Debut

Variables	Early Sexual Debut		χ^2	p-value
	No n (%)	Yes n (%)		
Country of residence			44.877	< .001
Burkina Faso	372(96.9)	12(3.1)		
Ethiopia	127(100.0)	0(0.0)		
Ghana	546(92.90)	42(7.1)		
Nigeria	126(92.0)	11(8.0)		
South Africa	665(93.5)	46(6.5)		
Tanzania	964(88.8)	121(11.2)		
Uganda	652(93.7)	44(6.3)		
Types of HDSS sites			0.081	0.776
School based	126(92)	11(8.0)		
Community based	3326(92.6)	265(7.4)		
Age Categories			167.492	< .001
15–19 years	881(83.7)	171(16.3)		
20–24 years	2571(96.1)	105(3.9)		
Sex of the respondent			71.138	< .001
Male	1483(88.6)	191(11.4)		
Female	1969(95.9)	85(4.1)		
Currently in a school, college, or vocational institute			0	0.995
No	2502(92.6)	200(7.4)		
Yes	950(92.6)	76(7.4)		
Religion			22.177	< .001
Catholic	564(95.1)	29(4.9)		
Protestant	1509(90.9)	151(9.1)		
Orthodox	326(96.7)	11(3.3)		
Muslim	601(93.2)	44(6.8)		

Variables	Early Sexual Debut		χ^2	p-value
	No n (%)	Yes n (%)		
Traditional faiths	264(91)	26(9.0)		
Others	188(92.6)	15(7.4)		
Engaged in any work in the past 12 months			.423	0.516
No	1184(92.2)	100(7.8)		
Yes	2268(92.8)	176(7.2)		
Parents alive			1.330	0.722
Both parents alive	2547(92.4)	210(7.6)		
Mother alive	600(93.6)	41(6.4)		
Father alive	182(91.9)	16(8.1)		
Others	123(93.2)	9(6.8)		
Currently live with my mother			2.474	0.116
No	1658(93.3)	119(6.7)		
Yes	1794(92.0)	157(8.0)		
Currently live with my father			4.446	0.035
No	2244(93.3)	162(6.7)		
Yes	1208(93.4)	114(8.6)		
Currently live with other male guardians			10.427	0.001
No	3162(93.0)	237(7.0)		
Yes	290(88.1)	39(11.9)		
Currently live with other female guardians			1.549	0.213
No	3028(92.8)	235(7.2)		
Yes	424(91.2)	41(8.8)		
Currently live with siblings			5.032	0.025
No	2412(93.2)	175(6.8)		
Yes	1040(91.1)	101(8.9)		
Perceived household socioeconomic status			13.957	< .001
Low	2638(91.7)	238(8.3)		

Variables	Early Sexual Debut		χ^2	p-value
	No n (%)	Yes n (%)		
High	814(93.5)	38(4.5)		
Own a mobile phone or can access one			.043	0.835
No	633(92.4)	52(7.6)		
Yes	2819(92.6)	224(7.4)		
Own a WhatsApp account			12.241	< .001
No	2270(91.5)	210(8.5)		
Yes	1182(94.7)	66(5.3)		
Own a Telegram account			10.543	0.001
No	3025(92.1)	260(7.9)		
Yes	427(96.4)	163.6(3.6)		

INSERT Table 2 HERE

Determinants of Early Sexual Debut among AYAs in Sub-Saharan Africa

After adjustment for confounders, ownership of WhatsApp or Telegram accounts was not statistically significant. Significant determinants of early sexual debut included country of residence; compared to Burkina Faso, AYAs in Ghana (aOR = 4.422, 95% CI: 2.047–9.552, $p < .001$), Nigeria (aOR = 5.608, 95% CI: 2.000–15.721, $p = .001$), Tanzania (aOR = 3.631, 95% CI: 1.740–7.578, $p = .001$), and Uganda (aOR = 2.087, 95% CI: 1.034–4.212, $p = .040$) had higher odds of early sexual debut. AYAs in South Africa did not differ significantly from those in Burkina Faso (aOR =)

Age category was also a significant determinant; adolescents aged 15–19 years, compared to those aged 20–24 years (reference category), had higher odds (aOR = 4.393, 95% CI: 3.311–5.827, $p < .001$). Sex remained a significant determinant, with males having higher odds compared to females (aOR = 2.910, 95% CI: 2.175–3.894, $p < .001$).

Furthermore, living arrangement and socioeconomic status were significant determinants. AYAs not living with a male guardian, compared to those living with a male guardian (reference category), had lower odds of early sexual debut (aOR = 0.430, 95% CI: 0.284–0.652, $p < .001$). In addition, AYAs from households with low socioeconomic status, compared to those from higher socioeconomic status households, had higher odds of early sexual debut (aOR = 1.909, 95% CI: 1.308–2.786, $p = .001$) (Table 3).

Table 3
Predictors of Early Sexual Debut among AYAs in Sub-Saharan Africa

Variables	cOR(95%CI)	p-value	aOR(95%CI)	p-value
Country of residence				
Burkina Faso	Ref		Ref.	
Ghana	2.385(1.239–4.590)	0.009	4.422(2.047–9.552)	< 0.001
Nigeria	2.706(1.165–6.286)	0.021	5.608(2.000–15.721)	0.001
South Africa	2.144(1.122–4.099)	0.021	1.685(0.73–3.886)	0.221
Tanzania	3.891(2.125–7.126)	< 0.001	3.631(1.740–7.578)	0.001
Uganda	2.092(1.091–4.011)	0.026	2.087(1.034–4.212)	0.04
Age Categories				
15–19 years	4.624(3.583–5.968)	< 0.001	4.393(3.311–5.827)	< 0.001
20–24 years	Ref		Ref	
Sex of the respondent				
Male	2.996(2.299–3.904)	< 0.001	2.91(2.175–3.894)	< 0.001
Female	Ref		Ref	
Religion				
Catholic	Ref		Ref	
Protestant	1.949(1.295–2.934)	0.001	1.021(0.577–1.805)	0.944
Orthodox	0.989(0.485–2.014)	0.975	0.605(0.258–1.422)	0.249
Muslim	1.448(0.893–2.346)	0.133	1.51(0.818–2.788)	0.188
Traditional faiths	1.912(1.104–3.311)	0.021	1.702(0.896–3.234)	0.104
Others	1.549(0.813–2.952)	0.184	1.101(0.549–2.210)	0.786
Currently live with my mother				
No	0.835(0.662–1.07)	0.154	1.152(0.837–1.587)	0.386
Yes	Ref		Ref	
Currently live with my father				
No	0.776(0.604–0.996)	0.046	0.943(0.684–1.301)	0.722
Yes	Ref		Ref	

Variables	cOR(95%CI)	p-value	aOR(95%CI)	p-value
Country of residence				
Currently live with male guardians				
No	0.568(0.396–0.813)	0.002	0.43(0.284–0.652)	< 0.001
Yes	Ref		Ref	
Currently live with siblings				
No	0.745(0.577–0.963)	0.024	0.832(0.617–1.122)	0.227
Yes	Ref.			
Perceived household socioeconomic status				
Low	1.888(1.328–2.683)	0.024	1.909(1.308–2.786)	0.001
High	Ref		Ref	
Own a WhatsApp account				
No	Ref		Ref	
Yes	0.592(0.445–0.788)	< 0.001	0.75(0.519–1.085)	0.127
Own a Telegram account				
No	Ref		Ref	
Yes	0.546(0.325–0.915)	0.022	0.726(0.380–1.387)	0.333

INSERT Table 3 HERE

Discussion

The study demonstrates that early sexual debut among adolescents and young adults (AYAs) aged 15–24 years in Sub-Saharan Africa (SSA) remains a notable public health concern. Overall, 7.4% of AYAs reported initiating sexual intercourse before the age of 15 years. This prevalence was substantially higher among males (11.4%) compared to females (4.1%), indicating marked sex differentials in the timing of sexual initiation. A similar study conducted in Kenya also reported a higher prevalence among male AYAs compared to females (22). Although the prevalence observed in this study is lower than that documented in previous studies (1, 11, 22), this decline may reflect increasing awareness of sexual and reproductive health, the expansion of school-based programs, and greater access to information through digital platforms.

SSA is experiencing a rapid increase in digital access among young people, creating both opportunities for networking and a powerful platform for health education. The findings indicated that while 81.6% of

AYAs owned mobile phones, 33.5% had WhatsApp accounts, and 11.9% reported owning Telegram accounts. A similar study conducted in the same region in 2022 reported a lower proportion of AYAs who owned mobile phones(23). The lower proportion in the previous study may reflect its focus on school-going AYAs with restricted phone ownership, whereas the current study included both in-school and out-of-school AYAs, resulting in higher reported ownership.

Early sexual debut showed cross-country variation, with higher odds observed in Ghana, Nigeria, Tanzania, and Uganda compared to Burkina Faso. These disparities likely reflect a combination of contextual influences and methodological differences, particularly in recruitment strategies. Specifically, participants in Ghana and Uganda were recruited predominantly from rural settings, whereas those in Tanzania, Ethiopia, South Africa, Burkina Faso, and Nigeria were drawn from urban or peri-urban populations. So, these findings should be interpreted within their specific contextual and sampling frameworks, and direct cross-country comparisons should be approached with caution. The observed variation is consistent with patterns reported in prior analyses based on DHS data(1, 24).

Age remained a significant determinant of early sexual debut, with adolescents aged 15–19 years exhibiting markedly higher odds compared to those aged 20–24 years. The higher odds of early debut among 15- 19-year-olds compared to 20–24-year-olds may reflect differential recall (recent events being better remembered), survival bias, or genuine cohort-level changes in sexual initiation patterns. Longitudinal data are required to distinguish between these possibilities. This interpretation is consistent with evidence from a study conducted in Mozambique, which similarly documented a higher likelihood of early sexual debut among younger adolescents. Collectively, these results point to a transition toward earlier sexual initiation across generations, highlighting the need for earlier and more targeted sexual and reproductive health interventions(2).

Sex differences were also pronounced. Male AYAs were nearly three times more likely to report early sexual debut than females. This finding is consistent with evidence from Nigeria and other SSA contexts, where males tend to initiate sexual activity earlier than females(25). Sociocultural norms that encourage or tolerate early sexual experimentation among males, alongside stronger parental control and stricter social expectations placed on females, may contribute to delayed sexual initiation among girls(26).

Living arrangements further influenced early sexual initiation. AYAs living with a male guardian were twice as likely to experience early sexual debut compared with those living with female caregivers. This may reflect reduced supervision, weaker emotional closeness, or limited communication around sexual and reproductive health in male-guarded households. Cultural norms and household dynamics may further constrain open discussions about sexuality, leaving AYAs less informed and less supported in delaying sexual debut(27).

This study also found that AYAs who were not living with siblings had significantly lower odds of early sexual debut compared to those living with siblings. This suggests that co-residence with siblings, possibly through increased peer-like influence or reduced parental supervision in larger households, may

be associated with earlier sexual initiation. However, the finding likely reflects broader household dynamics rather than a direct causal effect of sibling presence alone.

Perceived household socioeconomic status was inversely associated with early sexual debut. AYAs who reported being from wealthier families were less likely to initiate sexual activity early than those from poorer households, consistent with findings from East Africa(28). Greater access to education, parental supervision, material resources, and structured opportunities among wealthier families may offer protective effects, whereas AYAs from poorer households may face heightened vulnerability due to limited guidance and exposure to risk-prone environments.

With respect to digital access, this study measured ownership of a mobile phone and ownership of WhatsApp or Telegram accounts and did not assess the frequency, intensity, or nature of platform use among AYAs. Ownership of WhatsApp or Telegram accounts was initially associated with a lower likelihood of early sexual debut; AYAs with WhatsApp accounts were 20% less likely, and those with Telegram accounts 19% less likely, to initiate sexual activity early, although these associations became non-significant after adjustment for confounders. Similar protective effects of general media exposure have been reported among Tanzanian women of reproductive age(8). In contrast, a study in northern Ethiopia documented increased odds of early sexual debut associated with media exposure, likely because it specifically examined exposure to pornographic content rather than general access to media platforms(29). The absence of measures capturing actual media use and content exposure in the present study may have limited the ability to detect more nuanced associations, highlighting the importance of distinguishing between digital access and media use in future research.

Several limitations should be acknowledged. The cross-sectional design limits causal inference, and reliance on self-reported data may have introduced recall and social desirability biases. The use of general measures of proxy indicators for media exposure, socioeconomic status, and the absence of unmeasured factors such as parental attitudes or cultural norms may have influenced the results. Additionally, the analysis did not account for complex survey design features, including sampling weights, stratification, and clustering, which may have affected the precision and representativeness of the estimates.

Furthermore, the observed association between digital access and early sexual debut should be interpreted with caution due to temporal misalignment in measurement. Digital access was assessed at the time of the survey, whereas early sexual debut may have occurred several years earlier, particularly among participants aged 20–24 years. For many individuals in this age group, sexual debut likely preceded widespread access to smartphones or social media, limiting the plausibility of a direct temporal relationship. This mismatch complicates causal interpretation and suggests that the findings may reflect current exposure patterns rather than conditions at the time of sexual initiation.

Despite these limitations, the study provides important multi-country evidence on the determinants of early sexual debut among AYAs in Sub-Saharan Africa. Future research should employ longitudinal

designs, integrate detailed exposure assessments, adjust for complex survey designs, and incorporate qualitative approaches to deepen understanding of the underlying mechanisms.

Conclusion

Early sexual debut among AYAs aged 15–24 years in SSA remains a significant public health concern, with prevalence patterns influenced by individual, household, and contextual factors. The study highlights that male AYAs, younger adolescents, those living with male guardians, and AYAs from poorer households are at higher risk of initiating sexual activity early. Regional differences further highlight the role of socio-cultural and environmental contexts, while media ownership and access show potential but complex associations with sexual behaviors. These findings emphasize the need for targeted, context-sensitive interventions that address both individual and structural determinants of early sexual debut. Policymakers and stakeholders should prioritize comprehensive, gender-sensitive sexual and reproductive health education and support programs, particularly for out-of-school AYAs, males, and those from lower socioeconomic backgrounds, to effectively delay early sexual debut.

Abbreviations

aOR

Adjusted Odds Ratio

ARISE

Africa Research, Implementation Science, and Education

AYAs

Adolescents and Young Adults

BMFTR

German Federal Ministry of Research, Technology and Space

cOR

crude Odds Ratio

DASH

Research Network for the Design and Evaluation of Adolescent Health Interventions and Policies in Sub-Saharan Africa

HDSS

Health and Demographic Surveillance System

HIV

Human Immunodeficiency Virus

RHISSA

Research Networks for Health Innovations in Sub-Saharan Africa

SSA

Sub-Saharan Africa

Declarations

Ethical Considerations

The DASH study protocol was approved by the Ethics Commission of the Medical Faculty of Heidelberg University (Reference number: S-559/2023) and subsequently adapted for ethical approval at each participating site. The study was conducted in accordance with the principles of the Declaration of Helsinki. Participation of study subjects was voluntary. For participants under the age of 18 years, written informed consent was obtained from a parent or legal guardian, together with both written and oral assent from the adolescent participant themselves. For participants aged 18 years or older, written informed consent was obtained directly from the participant. Participants could skip questions they found uncomfortable, and individuals identified with anaemia were referred for appropriate care.

Consent for publication

Not applicable

Availability of data and materials

The data that support the findings of this study are available from the corresponding author, Fabiola Vincent Moshi, upon reasonable request. Corresponding author email: fabiola.moshi@gmail.com

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Competing interests

The authors declare no competing interests.

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Authors' contributions

FVM conceptualized the study, conducted the data analysis, and drafted the original manuscript. ID, DA, EP, SAV, SS, JB, M, IM, MK, N, CN, AK, AH, AM, and AN contributed to the initial review of the manuscript and provided critical intellectual input. Furthermore, WF, SM, ID, JM, AT, MY, MMS, ML, JB, MM, AO, AS, YB, AM, and JK supervised the proposal development, coordinated the data collection process, and contributed to the report writing process. All authors reviewed and approved the final version of the manuscript.

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References

1. Ferede TA, Muluneh AG, Wagnew A, Walle AD. Prevalence and associated factors of early sexual initiation among female youth in sub-Saharan Africa : a multilevel analysis of recent demographic and health surveys. *BMC Women's Health* [Internet]. 2023;1–11. Available from: <https://doi.org/10.1186/s12905-023-02298-z>
2. Muleia R, Damião SL, Banze ÁR. among adolescents and youth in Mozambique : A geo-additive survival analysis of the Mozambique 2021 AIDS. 2025;1–17. Available from: <https://doi.org/10.1371/journal.pone.0326869>
3. Epstein M, Furlong M, Kosterman R, Bailey JA, King KM, Vasilenko SA, et al. Adolesc Age Sex Initiation Subsequent Adult Health Outcomes. 2018;108(6):822–8.
4. Burnett S, Blakemore S Jayne. *Dev Adolesc Social Cognition*. 2014;(July 2009).
5. Ballonoff A, Galván A, Harden KP, Dahl RE. Developmental Cognitive Neuroscience Becoming a sexual being : The ' elephant in the room ' of adolescent brain development. *Accid Anal Prev* [Internet]. 2017;25:209–20. Available from: <http://dx.doi.org/10.1016/j.dcn.2016.09.004>
6. Leekuan P, Kane R, Sukwong P, Kulnitichai W. Understanding sexual and reproductive health from the perspective of late adolescents in Northern Thailand : a phenomenological study. *Reprod Health* [Internet]. 2022;1–17. Available from: <https://doi.org/10.1186/s12978-022-01528-1>
7. Kushal SA, Amin DM, Sc Y, Reza M et al. S, D M,. Regional and Sex Differences in the Prevalence and Correlates of Early Sexual Initiation Among Adolescents Aged 12 e 15 Years in 50 Countries. *J Adolesc Heal* [Internet]. 2022;70(4):607–16. Available from: <https://doi.org/10.1016/j.jadohealth.2021.10.027>

8. Eliufoo E, Mtoro MJ, Godfrey V, Bago M, Kessy IP, Millanzi W. Prevalence and associated factors of early sexual initiation among female youth in Tanzania : a nationwide survey. 2025.
9. Amanu A, Birhanu Z, Godesso A. Sexual and reproductive health literacy among young people in Sub-Saharan Africa : evidence synthesis and implications. *Glob Health Action* [Internet]. 2023;16(1). Available from: <https://doi.org/10.1080/16549716.2023.2279841>
10. Millanzi WC, Osaki KM, Kibusi SM. Parent-adolescent communication about sexual and reproductive health and its determinants among adolescents : Baseline findings from a Randomized Controlled Trial in Tanzania. 2023;(December):1–9.
11. Kizito A. Prevalence and Determinants of Early Sexual Debut among Teenage Students : A Prevalence and Determinants of Early Sexual Debut among Teenage Students : A Study in Kiryandongo District, Uganda. 2024;(April).
12. Millanzi WC, Osaki KM, Kibusi SM. Attitude and prevalence of early sexual debut and associated risk sexual behavior among adolescents in Tanzania ; Evidence from baseline data in a Randomized Controlled. *BMC Public Health* [Internet]. 2023;1–13. Available from: <https://doi.org/10.1186/s12889-023-16623-6>
13. Haji HA. East African Journal of Information Technology Determinants of Mobile Phone Usage Among Young Adults in Zanzibar. 2024;7(1):400–11.
14. Lee BR, Lee JH. Association between smartphone overdependence and sexual behavior in adolescents : a secondary data analysis of the 19. *Youth Health Behav Surv*. 2025;31(3):134–43.
15. Havewala M, Bowker JC, Smith KA, Rose-krasnor L, Booth-laforce C, Laursen B et al. Peer Influence Dur Adolescence : Moderating Role Parent Support. 2021;1–15.
16. Leijse MML, Koning IM, Eijnden RJJM, Van Den. Computers in Human Behavior The influence of parents and peers on adolescents ' problematic social media use revealed. *Comput Human Behav* [Internet]. 2023;143(April 2022):107705. Available from: <https://doi.org/10.1016/j.chb.2023.107705>
17. Cornelius JB, Appiah JA. Using mobile technology to promote safe sex and sexual health in adolescents : current practices and future recommendations. 2016;43–57.
18. Dowling R, Howell EM, Dasco MA, Schwartzman J. Digital Adolescent Sexual and Reproductive Health in Low- and Middle-Income Countries. *Scoping Rev*. 2025;1–18.
19. Feroz AS, Ali NA, Khoja A, Asad A, Saleem S. Using mobile phones to improve young people sexual and reproductive health in low and middle – income countries : a systematic review to identify barriers, facilitators, and range of mHealth solutions. *Reprod Health* [Internet]. 2021;1–13. Available from: <https://doi.org/10.1186/s12978-020-01059-7>
20. Shinde S, Harling G, Assefa N, Bärnighausen T, Bukenya J, Chukwu A et al. Review Counting adolescents in : the development of an adolescent health indicator framework for population-based settings. *eClinicalMedicine* [Internet]. 2023;61:102067. Available from: <https://doi.org/10.1016/j.eclinm.2023.102067>
21. Hosmer DW Jr, Lemeshow S, Sturdivant RX. Applied logistic regression. John Wiley & Sons; 2013.

22. Mauti G, Muthoni S. Early Sexual Debut and the Associated Factors among School. 2023;7(2):219–27.
23. Wang D, Shinde S, Drysdale R, Vandormael A, Tadesse AW, Sherfi H et al. Access to digital media and devices among adolescents in sub - Saharan Africa : A multicountry, school - based Surv. 2025;21(May 2022).
24. Fentie EA, Kidie AA, Fetene SM, Shewarega ES. Socioeconomic inequality in early sexual initiation among female youths in sub – Saharan African countries : a decomposition analysis. BMC Public Health [Internet]. 2023;1–11. Available from: <https://doi.org/10.1186/s12889-023-16124-6>
25. Okonta UG. Prevalence, predictors and selected outcomes of early sexual initiation among adolescents in secondary schools in Lugbe, Abuja, Nigeria : a mixed methods study. 2025;1–8.
26. Khumalo S, Taylor M, Makusha T, Mabaso M. Intersectionality of cultural norms and sexual behaviours : a qualitative study of young Black male students at a university in KwaZulu – Natal, South Africa. Reprod Health [Internet]. 2020;1–10. Available from: <https://doi.org/10.1186/s12978-020-01041-3>
27. Ndugga P, Kwagala B, Wandera SO, Kisaakye P, Mbonye MK. If your mother does not teach you, the world will ... : a qualitative study of parent- adolescent communication on sexual and reproductive health issues in Border districts of eastern Uganda. 2023;1–12.
28. Hailegebreal S, Gilano G, Seboka BT, Sidelil H, Awol SM. Prevalence and associated factors of early sexual initiation among female youth in East Africa : further analysis of recent demographic and health survey. BMC Womens Health [Internet]. 2022;1–9. Available from: <https://doi.org/10.1186/s12905-022-01895-8>
29. Ayalew A, Abreha K, Shumey A, Berhane K. Magnitude and Predictors of Early Sexual Debut among High and Preparatory School Students in Northern Ethiopia : A School-based Cross-. Volume 3. sectional Study Health Education Research & Development; 2015. 3.

Figures



Figure 1: Data extraction flow chart

Figure 1

See image above for figure legend

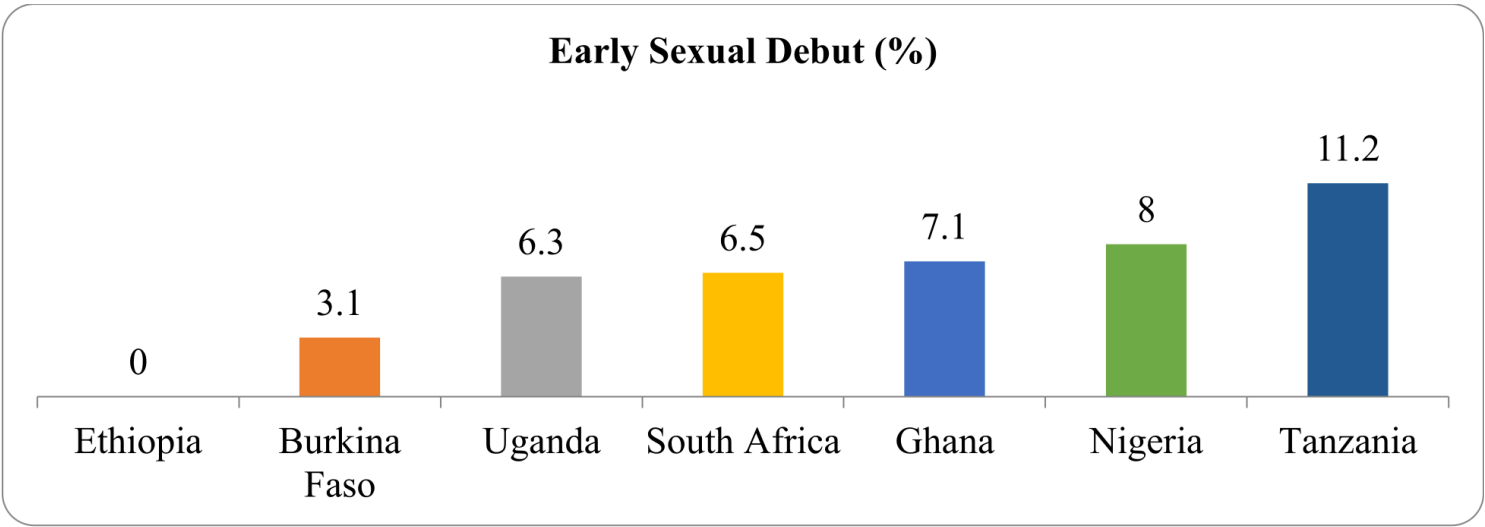


Figure 2: Early Sexual Debut (%) by Country (AYAs 15–24)

Figure 2

See image above for figure legend

Supplementary Files

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- [SupplementaryFile1EnglishVersionQuestionnaire.docx](#)