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Early sexual debut among adolescent girls and young women in Sierra Leone: A multilevel analysis of prevalence and predictors

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Abstract

Background Early sexual debut among young women is associated with adverse sexual and reproductive health outcomes, including unintended pregnancies and sexually transmitted infections. Despite its negative impact, there is limited research on this issue in Sierra Leone. This study aims to address this gap by examining the prevalence of early sexual debut and its associated factors among adolescent girls and young women aged 15–24 years in Sierra Leone.

Methods Data from the 2019 Sierra Leone Demographic and Health Survey was used for the study. Provincial variations in the proportion of early sexual debut were visualised using a spatial map. A mixed-effect multilevel binary logistic regression analysis was performed to examine the factors associated with early sexual debut. The results were presented as adjusted odds ratios (aOR) with a 95% confidence interval (CI) and intraclass correlation coefficients.

Results The prevalence of early sexual debut was 26.1% [24.3, 28.0]. Adolescent girls and young women aged 20–24 were less likely to engage in early sexual debut [aOR = 0.52; 95% CI: 0.41, 0.65] than those aged 15–19. The odds of early sexual debut was lower among adolescent girls and young women with secondary/higher education [aOR = 0.62; 95% CI: 0.45, 0.85] compared to those with no education. Adolescent girls and young women who used the internet in the last 12 months [aOR = 0.50; 95% CI: 0.34, 0.73] and those who belonged to the Fullah ethnic group [aOR = 0.25; 95% CI: 0.07, 0.85] were less likely to engage in early sexual debut relative to those who did not use the internet and those belonging to the Creole ethnic group respectively. Adolescent girls and young women who intend to use contraceptives [aOR = 0.60; 95% CI: 0.46, 0.77] and those who do not intend to use contraceptives [aOR = 0.65; 95% CI: 0.49, 0.88] were less likely to engage in early sexual debut than those who were using contraceptives. Conversely, adolescent girls and young women who were working [aOR = 1.41; 95% CI: 1.12, 1.77] had higher odds for early sexual debut than those not working. The odds of early sexual debut were higher among adolescent girls and young women who were married/cohabiting [aOR = 1.72; 95% CI: 1.32, 2.22] and previously married [aOR = 3.26; 95% CI: 1.61, 6.56] than those who were never married. Adolescent girls and young women living

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in the North Western area [aOR = 1.81; 95% CI: 1.05, 3.13] had higher odds for early sexual debut than those living in the Eastern province.

Conclusion Early sexual debut is prevalent among adolescent girls and young women in Sierra Leone. Age, education, internet use, ethnicity, contraceptive use intention, marital status, employment status, and province of residence were the factors associated with early sexual debut. The study underscores the need for policymakers, government, and non-governmental organisations to design and implement comprehensive and multifaceted interventions to promote informed decision-making and reproductive health among adolescent girls and young women in Sierra Leone.

Keywords Early sexual debut, Adolescent girls and young women, Sierra Leone, Demographic and Health Survey

Introduction

Early sexual debut refers to engaging in first sexual intercourse at a young age, usually before 15 years old [1, 2]. Globally, the prevalence of early sexual debut varies across regions and countries [3]. For instance, the prevalence of early sexual initiation in the region of the Americas was found to be 18.4% [3], whereas, in Southeast Asia, it was 5.3% [3, 4]. In Brazil, one study reported that 18% of boys and 7% of girls had an early sexual debut [5]. Furthermore, in sub-Saharan Africa, the prevalence of early sexual initiation among female youths was reported to be 46.39%, ranging from 16.66% in Rwanda to 76.41% in Liberia [2, 6–10]. Hence, there is variability in the prevalence of early sexual debut across various regions and countries [7].

A large share of adolescents and young people characterises Sierra Leone's population [11]. Approximately 60% of the population is under 25, highlighting the substantial proportion of adolescents and young people in the country [11]. Young women in Sierra Leone are rooted in the intersection of several key issues [12]. According to the 2019 Siera Leone Demographic Health Survey (SLDHS), the median age at first sexual intercourse among women was 16.0 years [13], with a significant proportion reporting ever had sex (38.9%) and having multiple sexual partners (85.2%) [14]. This situation underscores the urgency of understanding sexual health behaviours among young women in Sierra Leone.

Mass media exposure, wealth index, place of residence, religion, marital status, educational status, and age [7, 8, 15]; living arrangement and orphanhood [16]; employed females living in rural areas [16, 17]; and education [2, 18] have been found to be associated with early sexual debut. These factors contribute to risky sexual behaviours and increase the likelihood of early sexual initiation among young people [14]. For instance, mass media exposure can expose adolescent girls and young women to sexually suggestive content that may normalize early sexual activity [15]. Wealth index can impact access to education, healthcare, and opportunities, potentially influencing decision-making regarding sexual behaviour [8]. Place of residence can affect exposure to sexual health information and services, as well as social norms surrounding sexuality [16, 17]. Religion may influence moral values and attitudes towards premarital sex [7]. Marital status can create expectations or pressures related to sexual activity [8], and educational status can impact knowledge about sexual health and decision-making [2]. Age can influence maturity levels, peer pressure, and exposure to sexual situations [7], and living arrangement and orphanhood can affect social support, economic circumstances, and decision-making autonomy [16]. Employment in rural areas may expose young women to limited opportunities and social pressures that can contribute to early sexual debut [17].

The consequences of early sexual debut can be severe and encompass a range of social, economic, and health issues [14]. These consequences include unwanted pregnancies, sexually transmitted infections (STIs), unsafe abortions, early marriages, school dropout, poor academic performance, stigma, discrimination, and reproductive health complications such as fistula or even death [14, 19–22].

Despite efforts like the 'hands-off-our-Girls' Campaign, United Nations Population Fund Support, and the Reproductive Health Taskforce [23], early sexual debut remains prevalent among young women in Sierra Leone. Additionally, a previous study has contributed valuable insights into early sexual debut and associated factors such as alcohol use, truancy, peer support and less parental support among adolescent girls and young women aged 15–24 in Sierra Leone [14].

Given the evolving dynamics of social, economic, and health-related factors, a more recent study investigating socioeconomic factors can provide invaluable insights into the prevalence and determinants of sexual risk behaviours among adolescent girls and young women aged 15–24 in Sierra Leone. Therefore, this study aims to investigate the prevalence of early sexual debut among adolescent girls and young women aged 15–24 and its associated factors. By gaining insights into the drivers of early sexual debut, policymakers, healthcare providers, and community stakeholders can develop targeted interventions and programmes to promote healthy sexual

behaviours, reduce unintended pregnancies and STIs, and improve the overall sexual and reproductive health outcomes of adolescent girls and young women in Sierra Leone.

Methods

Study design and sampling methods

Data for this study was sourced from the 2019 SLDHS, a cross-sectional survey conducted to collect data on demographic and health indicators among men, women, and children [24]. The 2019 SLDHS employed a multistage cluster sampling method to obtain a nationally representative sample of respondents for the survey [13]. The detailed sampling methodology can be found in the 2019 SLDHS report [13]. Data collection was conducted through face-to-face interviews using standardized questionnaires [13]. Trained data collectors conducted the interviews. The survey methodology included quality control measures such as training of interviewers, supervision of fieldwork, and data cleaning procedures to ensure the accuracy and reliability of the collected data [13]. A total of 15,574 women aged 15 to 49 were included in the 2019 SLDHS. Our study included 4438 sexually active adolescent girls and young women aged 15–24 in Sierra Leone. We adhered to the Strengthening the Reporting of Observational Studies in Epidemiology guidelines in writing the paper [25].

Variables

Outcome variable

The outcome variable in the study was early sexual debut. Adolescent girls and young women who had sexual intercourse before age 15 were categorised to have had early sexual debut and coded as 1=yes, otherwise coded as 0=no. Our coding of the outcome variable was informed by previous literature that used the DHS dataset [2, 7, 10].

Explanatory variables

Sixteen explanatory variables were used in this study. These variables were selected for inclusion in the study based on their association with early sexual debut following an extensive literature search [2, 7, 10] and their availability in the SLDHS. The variables were the age of the women, level of education, marital status, current working status, religion, ethnicity, internet usage, exposure to watching television, exposure to reading newspapers or magazines, exposure to listening to the radio, family size, ever heard of STIs, contraceptive use and intention, household wealth index, place of residence, and province of residence. Based on the hierarchical and complex nature of the DHS data, we segregated the variables into individual and contextual levels (household and community level variables) in line with the literature [2]. Table 1 shows the variables and their categories.

Ethical consideration

Due to the publicly available nature of the SLDHS dataset, we did not seek ethical approval for this study. We obtained permission to utilise the SLDHS for publication from the Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys (MEASURE DHS) before using the SLDHS dataset.

Statistical analyses

All the analyses were carried out using Stata software version 17.0. We used percentages with confidence intervals (CI) to summarise the prevalence of sexual debut among adolescent girls and young women in Sierra Leone. A spatial map was used to present the findings of the provincial variations in early sexual debut. We examined the distribution of early sexual debut across the individual and contextual level variables using cross-tabulation. A Pearson chi-square test of independence was utilised to select the significant variables for a mixed-effect multilevel binary logistic regression. The regression model included all the variables with p-values less than 0.05. The mixed-effect multilevel binary logistic regression was used to examine the factors associated with early sexual debut. To do this, we used four models (Model I-IV). Model I was an empty model with no explanatory variables, and it showed the variation in early sexual debut attributed to the clustering at the primary sampling unit (PSU). Model II and III included the individual and contextual-level variables, respectively. Model IV contained all the explanatory variables. The output was segregated into fixed-effect and random-effect models. The fixed effect results showed the strength of the association between the explanatory variables and early sexual debut. The results were presented using adjusted odds ratio (aOR) with their respective 95% CI. On the other hand, the random effect results measured the variation in early sexual debut using the intraclass correlation coefficient (ICC). All the analyses were weighted, and the svyset command in Stata, which contains the sampling weights, one or more stages of clustered sampling, and stratification, was used to address the complex nature of the DHS dataset.

Results

Background characteristics of the adolescent girls and young women in Sierra Leone

Table 1 shows the background characteristics of the adolescent girls and young women in Sierra Leone. More than half of the respondents were aged 20–24 (56.7%), had attained secondary/higher education (63.9%), never married (57.0%), and were Muslims (75.8%). Most of

Table 1 Background characteristics of the adolescent girls and young women 15–24 in Sierra Leone ($n=4438$)

Variable	Weighted frequency (*n*)	Weighted percentage (%)
Individual level variables		
Age (years)		
15–19	1921	43.3
20–24	2517	56.7
Level of education		
No education	962	21.7
Primary	639	14.4
Secondary/higher	2837	63.9
Current working status		
Not working	2022	45.6
Working	2416	54.4
Read newspapers or magazines		
Not at all	4023	90.7
Less than once a week	305	6.8
At least once a week	109	2.5
Listen to radio		
Not at all	2409	54.3
Less than once a week	990	22.3
At least once a week	1039	23.4
Watch television		
Not at all	3110	70.0
Less than once a week	661	15.0
At least once a week	667	15.0
Use internet		
Never	3595	81.0
Yes, the last 12 months	767	17.3
Yes, before the last 12 months	75	1.7
Family size		
Less than five	1179	26.6
Five or more	3259	73.4
Marital status		
Never married	2530	57.0
Married/cohabiting	1823	41.1
Previously married	84	1.9
Ethnicity		
Creole	31	0.7
Fullah	150	3.4
Kono	181	4.1
Limba	426	10.0
Loko	90	2.0
Madingo	105	2.4
Mende	1389	31.3
Sherbro	57	1.3
Temne	1619	36.5
Korankoh	179	4.0
Others	210	4.3
Religion		
Christian	1073	24.2
Islam	3365	75.8
Ever heard of sexually transmitted infections		
No	150	3.4
Yes	4288	96.6
Contraceptive use and intention		

Table 1 (continued)

Variable	Weighted frequency (*n*)	Weighted percentage (%)
Using	1506	34.0
Intend to use	1910	43.0
Does not intend to use	1021	23.0
Contextual level variables		
Wealth index		
Poorest	647	14.6
Poorer	778	17.5
Middle	884	19.9
Richer	1113	25.1
Richest	1015	22.9
Place of residence		
Urban	2187	49.3
Rural	2251	50.7
Province		
Eastern	855	19.3
Northern	915	20.6
North Western	826	18.6
Southern	780	17.6
Western	1062	23.9

the adolescent girls and young women were working (54.4%), never used the internet (81.0%), and had a family size of five or more people (73.4%). Moreover, 36.5% of the respondents belonged to the Temne ethnic group and almost all of them (96.6%) had heard of STIs. Additionally, most of the adolescent girls and young women intended to use contraceptives (43.0%), were of the richer wealth index (25.0%), and lived in rural areas (50.7%).

Bivariate results of early sexual debut among adolescent girls and young women

Table 2 shows the results of the bivariate analysis of early sexual debut among adolescent girls and young women in Sierra Leone. The prevalence of early sexual debut was 26.1% [24.3, 28.0]. The proportion of early sexual debut was higher among respondents aged 15–19 years (30.0%); those with primary education (36.7%); those who were working (31.2%); those who had never used the internet (29.6%); those previously married (40.4%); and those who had never heard of STIs (40.1%). Early sexual debut was prevalent among those who lived in households with poorest wealth index (35.7%), those living in rural areas (31.7%), and those living in the North Western Province (33.2%). Except for religion and family size, the remaining explanatory variables had statistically significant associations with early sexual debut at $p<0.05$.

Provincial distribution of the proportion of early sexual debut among adolescent girls and young women in Sierra Leone

Figure 1 shows the provincial distribution of the proportion of early sexual debut among adolescent girls and young women in Sierra Leone. Across the five provinces, there were variations in the proportion of early sexual debut in Sierra Leone. Respondents in the North Western Province had the highest proportion of early sexual debut (33.2%), whilst those in the Western Province had the lowest proportion (16.3%).

Factors associated with early sexual debut among adolescent girls and young women in Sierra Leone

Fixed effect results

Adolescent girls and young women aged 20–24 [aOR=0.52; 95% CI: 0.41, 0.65] had lower odds for early sexual debut than those aged 15–19. The odds of early sexual debut was lower among those with secondary/higher education [aOR=0.62; 95% CI: 0.45, 0.85] compared to those with no education. Respondents who used the internet in the last 12 months [aOR=0.50; 95% CI: 0.34, 0.73] and those who belonged to the Fullah ethnic group [aOR=0.25; 95% CI: 0.07, 0.85] were less likely to engage in early sexual debut relative to those who did not use the internet and those belonging to the Creole ethnic group respectively. Adolescent girls and young women who intend to use contraceptives [aOR=0.60; 95% CI: 0.46, 0.77] and those who do not intend to use contraceptives [aOR=0.65; 95% CI: 0.49, 0.88] were less likely to engage in early sexual debut relative to those who were using contraceptives. Conversely, adolescent girls and young women who were working [aOR=1.41; 95% CI: 1.12, 1.77] had higher odds for early sexual debut than those not working. Respondents who were married/cohabiting [aOR=1.72; 95% CI: 1.32, 2.22] and previously married [aOR=3.26; 95% CI: 1.61, 6.56] had higher odds

Table 2 Bivariate analysis of early sexual debut among adolescent girls and young women in Sierra Leone

Variables	Early sexual debut % [95% CI]	*p*-value
Overall prevalence	26.1 [24.3, 28.0]	
Age (years)		< 0.001
15–19	30.0 [27.4, 32.7]	
20–24	23.2 [21.0, 25.5]	
Level of education		< 0.001
No education	35.9 [31.9, 40.1]	
Primary	36.7 [32.6, 41.1]	
Secondary/higher	20.4 [18.4, 22.5]	
Current working status		< 0.001
Not working	20.0 [18.0, 22.3]	
Working	31.2 [28.7, 33.8]	
Read newspapers or magazines		< 0.001
Not at all	27.1 [25.2, 29.2]	
Less than once a week	15.3 [10.9, 21.2]	
At least once a week	20.1 [13.0, 29.7]	
Listen to radio		
Not at all	28.7 [26.4, 31.2]	0.002
Less than once a week	22.1 [18.9, 25.6]	
At least once a week	24.0 [20.8, 27.5]	
Watch television		< 0.001
Not at all	29.1 [26.8, 31.5]	
Less than once a week	19.7 [16.5, 23.4]	
At least once a week	18.5 [14.8, 22.9]	
Use internet		< 0.001
Never	29.6 [27.5, 31.7]	
Yes, the last 12 months	10.1 [7.9, 12.9]	
Yes, before the last 12 months	23.8 [13.9, 37.5]	
Family size		0.101
Less than five	28.2 [25.2, 31.3]	
Five or more	25.4 [23.4, 27.5]	
Marital status		< 0.001
Never married	21.7 [19.5, 24.0]	
Married/cohabiting	31.6 [28.8, 34.6]	
Previously married	40.4 [29.0, 52.9]	
Ethnicity		< 0.001
Creole	28.7 [13.7, 50.5]	
Fullah	12.2 [7.4, 19.3]	
Kono	19.7 [13.9, 27.2]	
Limba	24.0 [19.7, 29.0]	
Loko	24.4 [15.9, 35.5]	
Madingo	17.6 [10.7, 27.7]	
Mende	25.7 [23.0, 28.7]	
Sherbro	12.5 [5.8, 24.8]	
Temne	30.0 [26.8, 33.4]	
Korankoh	22.2 [14.0, 33.2]	
Others	30.6 [23.3, 39.1]	
Religion		0.993
Christian	26.1 [23.0, 29.5]	
Islam	26.1 [24.1, 28.3]	
Ever heard of STIs		< 0.001
No	40.1 [32.5, 48.1]	
Yes	25.6 [23.8, 27.6]	

Table 2 (continued)

Variables	Early sexual debut % [95% CI]	*p*-value
Contraceptive use and intention		0.013
Using	27.3 [24.5, 30.3]	
Intend to use	23.5 [21.2, 25.9]	
Does not intend to use	29.3 [25.6, 33.3]	
Wealth index		< 0.000
Poorest	35.7 [30.9, 40.8]	
Poorer	35.4 [31.6, 39.5]	
Middle	29.4 [25.7, 33.3]	
Richer	21.0 [18.2, 24.2]	
Richest	15.6 [12.7, 19.2]	
Place of residence		< 0.001
Urban	20.3 [17.8, 23.1]	
Rural	31.7 [29.2, 34.5]	
Province		< 0.001
Eastern	26.9 [23.3, 30.8]	
Northern	31.6 [27.0, 36.5]	
North Western	33.2 [28.6, 38.1]	
Southern	24.8 [21.4, 28.5]	
Western	16.3 [13.1, 20.2]	

for early sexual debut than those who were never married. The odds of early sexual debut were higher among those living in the North Western province [aOR=1.81; 95% CI: 1.05, 3.13] than those living in the Eastern province (Table 3, Model IV).

Random effect results

Table 3 indicates considerable variations in the factors associated with early sexual debut among adolescent girls and young women in Sierra Leone across the clusters (σ2=2.68, 95% CI=2.10 - 3.42) in the Model I. Approximately 45% of the proportion of early sexual debut was attributed to the variations between the clusters in Model I (ICC=0.45). The between-cluster differences decreased to 42% in Model II, and further reduced to 40% in Model III. However, the ICC value increased to 41% in Model IV. These ICC results suggest that the variations in early sexual debut can be attributed to the variances across the clusters.

Discussion

The study examined early sexual debut and its associated factors among adolescent girls and young women aged 15–24 years in Sierra Leone using the 2019 SLDHS data. The prevalence of early sexual debut in Sierra Leone was 26.1%, with the highest prevalence in the North Western Province (33.2%) and the lowest in the Western Area (16.3%). Differences in socioeconomic factors, cultural norms, and access to education and healthcare may explain the variation in early sexual debut prevalence across the provinces in Sierra Leone. For instance, in the North Western Province, lower socioeconomic conditions, limited access to education and healthcare, and cultural norms that promote early marriage and childbearing may contribute to higher rates of early sexual debut [26]. Conversely, the Western Area may benefit from better access to education, healthcare, and economic opportunities, which could lead to delayed sexual debut [27]. Additionally, cultural factors, such as religious beliefs and social norms surrounding sexuality, may vary across provinces and influence the timing of sexual initiation [28]. Other factors include urbanisation, poverty, and reproductive healthcare access [29]. In impoverished communities, adolescent girls and young women may be pressured to engage in early sexual relationships to provide economic support for themselves or their families. This could involve exchanging sexual favours for money, goods, or services [30]. Sierra Leone's history of civil conflict and the recent Ebola outbreak have had profound effects on the country's social, economic, and health systems [29, 31]. These disruptions have partly led to breakdowns in education, healthcare, and social support structures, making adolescent girls and young women more vulnerable to early sexual debut [31]. The conflict and disease outbreaks may have also led to increased poverty, displacement, and economic hardship, forcing adolescent girls and young women into situations where they may feel compelled to engage in early sexual activity for survival or to provide for their families [32]. Additionally, the trauma and stress associated with these events can impact mental health and

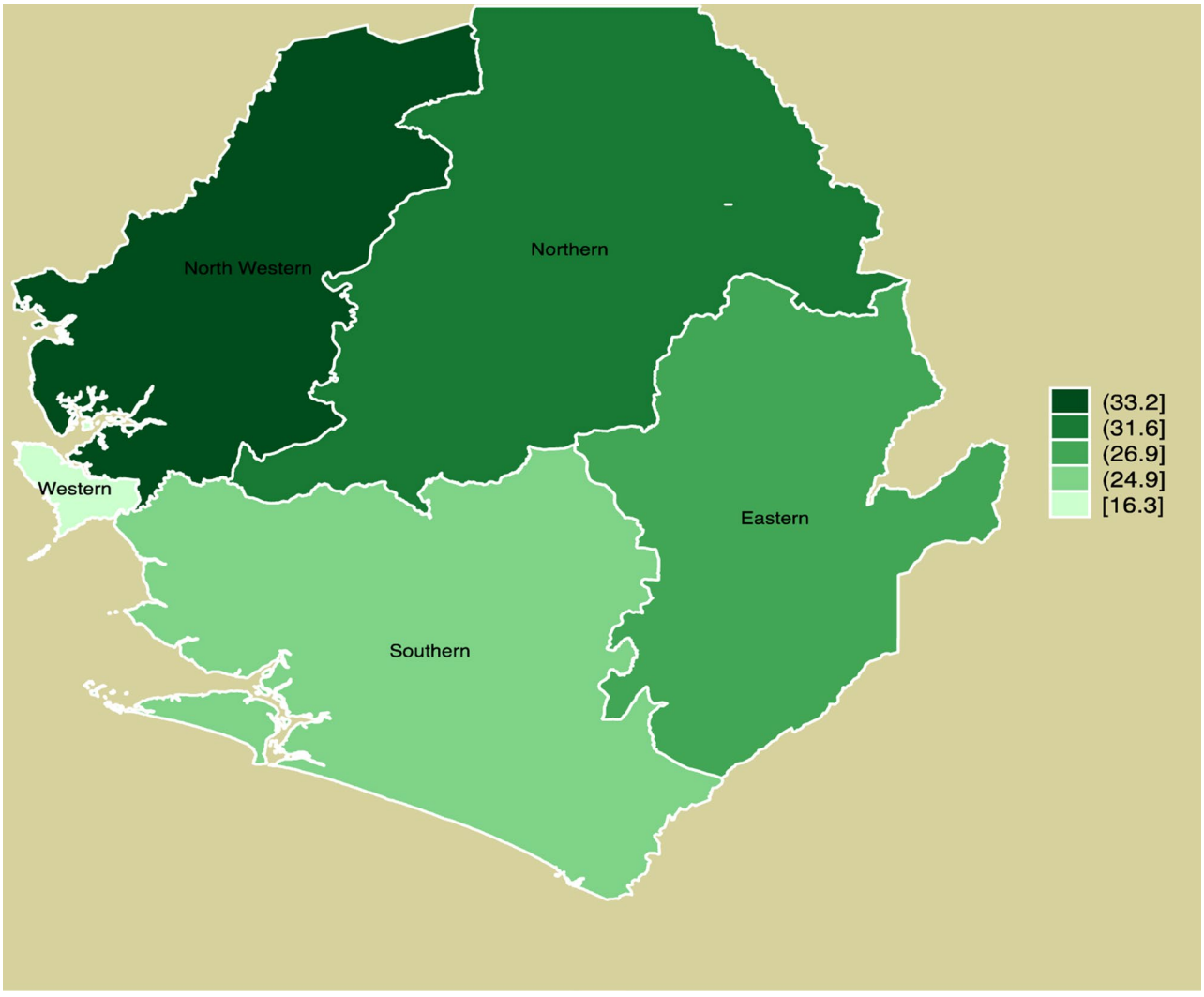

Fig. 1 Provincial distribution of the proportion (%) of early sexual debut among adolescent girls and young women in Sierra Leone

decision-making, potentially contributing to increased risk-taking behaviours [33].

Adolescent girls and young women aged 20–24 years were less likely than those aged 15–19 years to have had an early sexual debut. Our finding is inconsistent with the results of a previous study in Ghana where young women had higher odds of early sexual debut [34] but consistent with a multi-country study in East Africa [10] where young women aged 20-24 were less likely to engage in early sexual debut. Changes in societal attitudes and cultural norms, as well as access to information and resources over time, can affect trends in sexual behaviour among different age groups [35]. Women aged 20–24 may belong to a different generation or cohort with different experiences, opportunities, and attitudes toward sexual activity than those aged 15–19 [36]. This could potentially contribute to variations in the timing of sexual initiation. A study done in Thailand found a shift in behaviour among the youths, which they attribute to urbanisation and contemporary social changes altering sexual norms among young women [37].

Our study found that adolescent girls and young women with secondary/higher education had lower odds of early sexual debut than those with no education—the results aligned with previous studies conducted in Mali [2], sub-Saharan Africa [8], East Africa [10], and Ethiopia [38] where lower odds of early sexual debut was reported in adolescent girls and young women with secondary/higher education. Adolescent girls and young women who attained secondary or higher education may grow up in homes with greater access to reproductive health information when they were kids, reducing their risk to early sexual debut [39]. They may have better decision-making skills and autonomy and are more likely to comprehend the potential risks associated with early sexual intercourse, make informed choices, and delay sexual activity [40]. Moreover, considering their ability to attain secondary/higher education, such women may have been

Table 3 Factors associated with early sexual debut among adolescent girls and young women in Sierra Leone

Variables	Model I Empty model	Model II aOR [95% CI]	Model III aOR [95% CI]	Model IV aOR [95% CI]
Fixed effect results				
Age (years)				
15–19		1.00		1.00
20–24		0.52*** [0.41,0.64]		0.52*** [0.41,0.65]
Level of education				
No education		1.00		1.00
Primary		1.04 [0.75,1.43]		1.05 [0.77,1.45]
Secondary/higher		0.59** [0.43,0.82]		0.62** [0.45,0.85]
Current working status				
Not working		1.00		1.00
Working		1.42** [1.13,1.78]		1.41** [1.12,1.77]
Read newspapers or magazines				
Not at all		1.00		1.00
Less than once a week		0.73 [0.46,1.15]		0.74 [0.46,1.17]
At least once a week		1.14 [0.54,2.38]		1.18 [0.57,2.45]
Listen to radio				
Not at all		1.00		1.00
Less than once a week		1.10 [0.81,1.50]		1.11 [0.81,1.50]
At least once a week		0.91 [0.69,1.21]		0.91 [0.69,1.21]
Watch television				
Not at all		1.00		1.00
Less than once a week		1.00 [0.71,1.42]		1.05 [0.74,1.48]
At least once a week		0.95 [0.61,1.47]		1.02 [0.64,1.62]
Use internet				
Never		1.00		1.00
Yes, the last 12 months		0.48*** [0.33,0.70]		0.50*** [0.34,0.73]
Yes, before the last 12 months		1.55 [0.77,3.15]		1.57 [0.76,3.22]
Marital status				
Never married		1.00		1.00
Married/cohabiting		1.72*** [1.32,2.23]		1.72*** [1.32,2.22]
Previously married		3.34*** [1.64,6.81]		3.26** [1.61,6.56]
Ethnicity				
Creole		1.00		1.00
Fullah		0.27* [0.08,0.91]		0.25* [0.07,0.85]
Kono		0.71 [0.21,2.43]		0.64 [0.19,2.19]
Limba		0.68 [0.21,2.22]		0.58 [0.18,1.85]
Loko		0.55 [0.14,2.18]		0.47 [0.12,1.84]
Madingo		0.60 [0.17,2.08]		0.54 [0.16,1.86]
Mende		0.80 [0.27,2.39]		0.78 [0.26,2.33]
Sherbro		0.49 [0.09,2.69]		0.46 [0.08,2.57]
Temne		0.67 [0.22,2.02]		0.57 [0.19,1.71]
Korankoh		0.56 [0.15,2.16]		0.49 [0.13,1.85]
Others		0.97 [0.28,3.30]		0.85 [0.25,2.90]
Ever heard of STIs				
No		1.00		1.00
Yes		0.65 [0.39,1.09]		0.65 [0.39,1.09]
Contraceptive use and intention				
Using		1.00		1.00
Intend to use		0.61*** [0.47,0.78]		0.60*** [0.46,0.77]
Does not intend to use		0.66** [0.49,0.89]		0.65** [0.49,0.88]
Wealth index				
Poorest			1.00	1.00

Table 3 (continued)

Variables	Model I Empty model	Model II aOR [95% CI]	Model III aOR [95% CI]	Model IV aOR [95% CI]
Poorer			1.12 [0.80,1.56]	1.12 [0.79,1.59]
Middle			0.74 [0.51,1.07]	0.77 [0.51,1.15]
Richer			0.58* [0.35,0.96]	0.63 [0.38,1.07]
Richest			0.41** [0.22,0.80]	0.55 [0.28,1.08]
Place of residence				
Urban			1.00	1.00
Rural			1.22 [0.77,1.91]	0.85 [0.53,1.36]
Province				
Eastern			1.00	1.00
Northern			1.17 [0.80,1.71]	1.51 [0.91,2.50]
North Western			1.60* [1.03,2.48]	1.81* [1.05,3.13]
Southern			0.69 [0.47,1.02]	0.66 [0.43,1.01]
Western			0.71 [0.42,1.20]	1.02 [0.55,1.89]
Random effect model				
PSU variance (95% CI)	2.68 [2.10, 3.42]	2.34 [1.82, 3.01]	2.22 [1.75, 2.81]	2.25 [1.77, 2.86]
ICC	0.45 [0.39, 0.51]	0.42 [0.36,0.48]	0.40 [0.35,0.46]	0.41 [0.35, 0.47
N	4438	4438	4438	4438
Number of clusters	572	572	572	572

aOR=adjusted odds ratios; CI=Confidence Interval; * $p<0.05$, ** $p<0.01$, *** $p<0.001$; 1.00=Reference category; PSU=Primary Sampling Unit; ICC=Intraclass Correlation Coefficient

exposed to a more supportive environment for delaying sexual debuts, such as access to healthcare, supportive social networks, and opportunities for personal development [41].

Our study revealed that working adolescent girls and young women had higher odds of early sexual debut and this result is consistent with prior research conducted in Mali [2] and Ghana [17]. Adolescents and young women who engage in sexual activity early may be more likely to face challenges such as unintended pregnancies, which can interrupt their schooling and reduce their chances of continuing their education [18]. Lower educational achievement often forces young women into the labor force earlier, as they may not have the qualifications required for higher-paying or specialized jobs, pushing them into more immediate employment opportunities. Early sexual debut increases the risk of early pregnancy. If a young woman becomes a mother at an early age, the need to support a child may compel her to enter the workforce to meet financial obligations. Early motherhood often results in greater economic responsibilities, forcing women to find employment as a means of providing for themselves and their children [42].

Our study findings indicate that recent internet use serves as a protective factor against early sexual debut. Access to the internet offers young people a source of entertainment and information regarding sexual and reproductive health [43]. This access equips them with knowledge and support networks that may facilitate informed sexual decision-making [43]. However, it is noteworthy to mention a study conducted in Ghana found contrasting results [17]. In this study, individuals who were partially exposed to media, a common scenario in rural areas, exhibited a higher risk of early sexual debut [17]. This suggests that the impact of media exposure on sexual behaviour may vary depending on factors such as the extent of exposure and the socio-cultural context [15].

Respondents who are married, cohabiting, or previously married have a higher likelihood of early sexual debut compared to those who are never married in our study, and this finding aligns with the previous studies in Mali [2], a multi-country study in East Africa [10], and Ethiopia [44] which also reported the same finding as ours. Early marriage is widespread in sub-Saharan Africa [45]. Sierra Leone stands out as one of the countries with one of the highest rates of early marriage [45]; the United Nations Children's Fund report showed that approximately 40% of girls in Sierra Leone marry before their 18th birthday, contributing to this trend [46]. Additionally, in Ethiopia, Mekonnen found that having a boyfriend was associated with early sexual debut [44]. These discussions also emphasise the power imbalances inherent in child and forced marriages, where older partners may coerce or force younger ones into early sexual activity [27]. Addressing the implications of early marriage and sexual debut necessitates a comprehensive, multifaceted approach that tackles social, cultural, economic, and legal factors contributing to these practices [47]. In addition, the risk of early sexual debut is higher among ever married/cohabiting women because most young women who engaged in early sexual debut are more likely

to experience child marriage or cohabitation compared to those who had their first sex after 15 years.

We observed that adolescent girls and young women belonging to the Fullah ethnic group had lower odds of early sexual debut compared to those identifying as Creole by tribe which is the most widely spoken language in Sierra Leone. The Fullah ethnic group in Sierra Leone is predominantly Muslim and have a strong nomadic tradition, historically migrating with their livestock across the country [48]. Studies in Nigeria [49] and Ghana [50] have found that cultural, social norms, and religious practices vary across ethnic groups and can influence the timing of sexual debut. In particular, Islamic teachings emphasizing chastity, modesty, and abstinence outside of marriage have been linked to delayed sexual initiation among Muslim populations [51]. Conversely, a study conducted in Ghana revealed contrasting results [17]. The authors argued that the higher likelihood of early sexual debut among the Akans which is the largest ethnic group in Ghana, [17] and Ewes another major ethnic group could be attributed to a more permissive attitude towards sexuality within these ethnic groups, particularly in the absence of strict prohibitive sexual norms [17].

Our findings showed that adolescent girls and young women who intend to use contraceptives or do not intend to use them had lower odds for early sexual debut in our study compared to those using contraceptives. This is consistent with other studies in a multi country study in East Africa [10], and Ethiopia [52]. The findings suggest a proactive approach to sexual health and risk avoidance among those not currently using contraceptives [53]. Driven by a broader awareness of associated risks, such as avoiding unintended pregnancies or sexually transmitted infections and a commitment to responsible sexual behaviour [54]. This contrasts with those already using contraceptives, who may have initiated sexual activity early and seek to mitigate associated risks through contraceptive use [55].

Policy and practice implications

The findings underscore the importance of targeted public health interventions to delay early sexual debut by improving access to education and economic opportunities to empower young women to make informed decisions about their sexual health and promote comprehensive sexual education, particularly in provinces with higher prevalence. Also, policymakers should implement in all the provinces programmes to promote sexual health and wellbeing among young people. These may include school-based programmes, community outreach activities such as educational events, peer education programmes, collaborations with local organizations, and media campaigns, and youth-friendly reproductive health services, including confidential counselling, contraception, STI testing, and pre- and post-natal care. While the study provides valuable insights into early sexual debut in Sierra Leone, it also highlights the need for further research to explore underlying determinants and consequences. Longitudinal and qualitative studies could offer a deeper understanding and inform more effective intervention strategies. Overall, addressing the implications of early sexual debut requires a multifaceted approach, considering social, cultural, economic, and legal factors. Prioritising the rights and wellbeing of young women is essential for creating supportive environments for healthy transitions to adulthood.

Strengths and limitations

The major strength of our study lies in the use of a nationally representative survey dataset to examine early sexual debut and its associated factors among adolescent girls and young women in Sierra Leone. However, there are a couple of limitations needing acknowledgement. The cross-sectional design used in the SLDHS limits our study's ability to draw causal inferences between early sexual debut and the explanatory variables. Furthermore, reliance on self-reported data from the SLDHS introduces potential biases, including recall bias and social desirability bias, particularly regarding sensitive topics such as sexual debut. Despite efforts to ensure representativeness, the SLDHS may still be susceptible to sampling biases, especially among hard-to-reach or marginalised populations. Additionally, utilising secondary data for analysis means we may not have addressed all potential confounders.

Conclusion

The study showed a high prevalence of sexual debut among adolescent girls and young women in Sierra Leone. Factors associated with early sexual debut in Sierra Leone included: being of an adolescent age (15–19 years), lower education, non internet use, belonging to the Creole ethnic group, having the intention to use or not to use contraceptives, currently working, ever married/cohabiting, and living in the North Western Province.

The study underscores the need for policymakers, government, and non-governmental organisations to design and implement comprehensive and multifaceted interventions to promote informed decision-making and reproductive health among young women in Sierra Leone. Furthermore, enhancing access to information, education, and socioeconomic status represents crucial areas for interventions aimed at delaying the onset of early sexual debut.

Abbreviations

aOR	Adjusted Odds Ratio
CI	Confidence Interval

ICC	Intraclass Correlation Coefficient
PSU	Primary Sampling Unit
SLDHS	Sierra Leone Demographic and Health Survey
STIs	Sexually Transmitted Infections
MEASURE DHS	Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys

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Author contributions
AO and BOA contributed to the study design and conceptualisation. AO and BOA performed the analysis. AO, FGW, KA, CB, RGA, and BOA drafted the initial draft. All the authors critically reviewed the manuscript for its intellectual content. All authors read and amended drafts of the paper and approved the final version. AO had the final responsibility of submitting it for publication.

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Data availability
The data used for this study is freely available at https://www.dhsprogram.com/data/dataset/Sierra-Leone_Standard-DHS_2019.cfm?flag=0.

Declarations

Ethics approval and consent to participate
Ethical clearance was not sought for the study since the secondary dataset is freely available in the public domain. A detailed description of the ethical issues regarding the DHS and its dataset usage can be assessed at http://goo.gl/ny8T6X.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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