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Age at First Sexual Intercourse and Multiple Sexual Partnership Among Adolescent Girls and Young Women in Sub-Saharan Africa: A Cross-Sectional Study

Bright Opoku Ahinkorah¹ | Richard Gyan Aboagye²  | Irene Esi Donkoh³  | Joshua Okyere^{4,5}  | Abdul-Aziz Seidu⁶ | Sanni Yaya⁷ 

¹Faculty of Health and Medical Sciences, The University of Adelaide, Adelaide, South Australia, Australia | ²Department of Family and Community Health, Fred N. Binka School of Public Health, University of Health and Allied Sciences, Hohoe, Ghana | ³Department of Medical Laboratory Science, University of Cape Coast, Cape Coast, Ghana | ⁴Department of Population and Health, University of Cape Coast, Cape Coast, Ghana | ⁵School of Human and Health Sciences, University of Huddersfield, Huddersfield, Queensgate, United Kingdom | ⁶Public Health and Tropical Medicine, James Cook University, Townsville, Queensland, Australia | ⁷The George Institute for Global Health, Imperial College London, London, United Kingdom

Correspondence: Sanni Yaya (sanni.yaya@gmail.com)

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ABSTRACT

Background: There is evidence that early sexual debut plays a key role in the sexual behaviours of individuals. This study examined the association between age at first sexual intercourse and multiple sexual partnership among adolescent girls and young women in sub-Saharan Africa.

Methods: Our study included twenty-two sub-Saharan African countries with data sourced from the Demographic and Health Survey (2015–2022). We included a weighted sample of 69,194 adolescent girls and young women in our study. We presented the results of the proportion of adolescent girls and young women who practiced multiple sexual partnerships using ‘spmap’ in Stata. We performed a multivariable binary logistic regression analysis to examine the association between age at first sex and multiple sexual partnerships, controlling for the covariates.

Results: Overall, only 4.63% of adolescent girls and young women in sub-Saharan Africa engaged in multiple sexual partnerships. The hotspot countries for multiple sexual partnerships were Gabon (13.98%), Liberia (11.36%), Cameroon (7.84%), Cote d'Ivoire (7.59%), Kenya (7.33%), Tanzania (6.74%), and Sierra Leone (6.69%). Compared to young women whose age at first sex was 18 years and above, those who had their first sexual intercourse from 15 to 17 years and 14 years and below had higher odds of engaging in multiple sexual partnerships ([aOR=2.28; 95%CI: 1.96, 2.65] and [aOR=3.28; 95%CI: 2.76, 3.89]), respectively.

Conclusion: Our study has shown that age at first sex is a risk factor for multiple sexual partnerships. Consequently, it becomes imperative for sub-Saharan African countries to develop policies and implement programs aimed at discouraging early sexual debut. One practical approach to achieve this is through the widespread adoption of comprehensive sex education programs across sub-Saharan African countries.

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1 | Introduction

Multiple sexual partnership (MSP) is widely described as having more than one sequential or concurrent sexual partner during a certain period [1]. Generally, MSP is one of the global issues that puts a lot of individuals at risk for sexually transmitted infections (STIs) [1]. This sexual behaviour is prevalent in adolescent girls and young women between the ages of 11 and 21 as they experience significant physical, psychological, and emotional changes that have an impact on their sexual and reproductive health [2, 3]. Amidst these physiological and psychological changes, adolescent girls and young women are growing in a different dispensation where drugs, varied information, and the internet feed their sexual drive. The culmination of all these factors influences their sexual decisions and health, making them eager for their first sexual intercourse [4, 5].

The age at sexual debut has changed recently, with many young people showing faster physical maturity and having early sexual exposures [6]. By these developments, adolescents' sexual activities are also influenced in ways such as love or peer pressure, which leads to the engagement in risky sexual behaviours, including having MSP and early sexual exposure [6, 7]. Sexual behaviour is a complicated construct that is influenced by values found in diverse familial, religious, cultural, and societal contexts. These factors can influence an individual's fertility preference and the quantity of sexual encounters they engage in [1, 8, 9].

A multi-country sex-stratified analysis in Kenya, Malawi, Nigeria, Tanzania, and Uganda showed early sexual debut is prevalent among adolescent girls and young women aged 18 to 24, which increases their likelihood of having MSP [10]. It was further revealed that the prevalence of early sexual debut ranged from 8.6% in Tanzania to 17.7% in Malawi [10]. A study conducted in Uganda reported that 40.6% of young people between the ages of 18 and 24 (37.9% of men and 50.0% of women) reported having MSPs [8]. Multiple sexual partners were also positively correlated with being female because of their vulnerability [8].

While there may be regional variations in sexual norms and behaviour, sub-Saharan Africa (SSA) continues to see a plateau in teenage sexual activity, particularly among females, due to geographic, economic status, and educational standards [11, 12]. Given that most parents in SSA do not expose their children to sex education, among other prevailing factors, adolescents are at the whim of their peers who are into sexual promiscuity, including MSP. Evidence suggests that the duration of the first coitus is closely connected with the number of sexual partners among adolescents [1, 12]. Studies show that women who begin having sex at the age of 13 or 14 have a higher sexual partner turnover rate than those who begin having sexual intercourse in their early 20s [1, 13]. Although early sexual activity has also been associated with MSP in teenagers, victimised young women are far more likely to have adverse life outcomes, such as STIs, unwed pregnancy, abortion, single motherhood, unstable marriages, and poverty for both mothers and children [14].

Even with initiatives like education, STI awareness, and women's empowerment to lower MSP, especially in SSA among young women, the root factors still outweigh these countermeasures. This is due to the technological advancements and the existence of philosophies that encourage all sexual choices and alignments [15, 16]. Though this is an evolving trend felt in both high-income and low-and middle-income countries, the implications are particularly concerning for countries with high incidences of STIs, poor healthcare services, and economic downturns such as SSA [17]. Also, due to poor women's empowerment, susceptibility to intimate partner violence, and a higher rate of forced sexual initiation, adolescent girls and young women are frequently more susceptible to the risks of adverse consequences of early sexual debut, such as MSP [16, 18]. Although existing studies have found an association between age at first sex and MSP, these studies are limited in scope [1, 19]. There is therefore the need for more evidence on the association between age at first sex and MSP in SSA. Given this paucity, this study seeks to use nationally representative data from multiple countries in SSA to assess the association between age at first sex and MSP among adolescent girls and young women.

2 | Materials and Methods

2.1 | Data Source

Our study was conducted in 22 sub-Saharan African countries with data sourced from the recent Demographic and Health Survey (DHS). We pooled the data from the individual recode (women's file) in each country. We based the selection of the countries' data for inclusion into the study using two criteria: countries with datasets published from 2015 to 2022 and those countries that had observations on all variables of interest. Previous reports have elaborated on the systematic methodology that DHS adopted [20–22]. Briefly, a cross-sectional design was used for the DHS. A two-stage cluster sampling method was used to recruit the respondents for the survey. Trained data collectors used structured questionnaires to collect the data from the respondents. We included a weighted sample of 69,174 sexually active (history of sexual intercourse in the last 12 months) adolescent girls and young women in our study (Table 1). We based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist to draft this paper [23].

2.2 | Variables

MSP was the outcome variable. In the DHS, women who had at least one sexual partner aside from their spouse or partners in the 12 months preceding the survey were categorised as engaging in MSP and was coded as '1=yes'. The adolescent girls and young women whose sexual partners were their spouses or partners alone were categorised as '0=no'. Previous studies have adopted a similar categorisation in examining MSP using the DHS [9, 24].

TABLE 1 | Sample distribution per country.

Country	Survey year	Pooled weighted sample	Pooled weighted percentage
1. Angola	2015-16	2,755	4.0
2. Benin	2017-18	2,974	4.3
3. Burkina Faso	2021	3,277	4.7
4. Burundi	2016-17	3,349	4.8
5. Cameroon	2018	2,659	3.8
6. Cote d'Ivoire	2021	2,911	4.2
7. Ethiopia	2016	2,789	4.0
8. Gabon	2019-2021	1,992	2.9
9. Gambia	2019-20	1,940	2.8
10. Guinea	2018	2,075	3.0
11. Kenya	2022	5,993	8.7
12. Liberia	2019-2020	1,462	2.1
13. Madagascar	2021	3,588	5.2
14. Mali	2018	2,134	3.1
15. Malawi	2015-16	4,675	6.8
16. Nigeria	2018	7,948	11.5
17. Rwanda	2019-2020	2,804	4.1
18. Sierra Leone	2019	2,940	4.3
19. Tanzania	2022	3,073	4.4
20. Uganda	2016	3,478	5.0
21. Zambia	2018	2,551	3.7
22. Zimbabwe	2015	1,807	2.6
All countries	2015-2021	69174	100.0

Twelve explanatory variables were included in the study, with age at first sex as the key explanatory variable and the remaining being the covariates. Age at first sex was coded as '0 = 18 years and above', '1 = 15–17 years', and '2 = 14 years and below' [13]. The covariates included in the study were age of the respondents (15–19, 20–24); level of education (no education, primary, secondary or higher); employment status (not working [no], working [yes]); exposed to watching television (no, yes); exposed to reading newspaper or magazine (no, yes); exposed to listening to radio (no, yes); used internet (no, yes); comprehensive HIV/AIDS knowledge (no, yes); household wealth index (poorest, poorer, middle, richer, richest); place of residence (urban, rural); and geographic sub-region (Central Africa, Southern Africa, Eastern Africa, Western Africa). The coding and categorisation of the variables have been highlighted in the literature [1, 13, 24].

2.3 | Statistical Analyses

We presented the results of the proportion of adolescent girls and young women who engaged in MSP using 'spmap' in Stata. This was followed by a cross-tabulation analysis to show the distribution of MSP across the key explanatory variable and the covariates using percentages with their respective 95%

confidence interval (CI). A Pearson chi-square test of independence was performed to assess associations between categorical variables, using a two-sided significance threshold of $p < 0.05$. All regression analyses were conducted using two-sided hypothesis tests, and statistical significance was set at $p < 0.05$.

All the variables with p-values less or equal to 0.05 were included in the regression model. We checked for evidence of high collinearity among the variables included in the study using the variance inflation factor (VIF). The minimum, maximum, and mean VIFs were 1.07, 3.26, and 1.79, respectively. Hence, there was no evidence of high collinearity among the variables. We performed a multivariable binary logistic regression analysis to examine the association between MSP and age at first sex, controlling for the covariates. Adjusted odds ratios (aOR) with corresponding 95% CIs were reported.

All the analyses were weighted per DHS guidelines. We performed the weighting for each individual country before appending the dataset for the 22 countries. We conducted the country-level weighting by dividing the women's weighting variable by 1,000,000 to generate a new variable called "v005_pw". Subsequently, we denormalised the country-level weights using the command: `gen v005_pwpool=v005_pw*(total`

population of women; age 15–49, at the time of the survey/number of women aged 15–24 subsample. Later, we appended the data for the 22 countries, which was used for the final analysis. Stata version 17.0 (Stata Corporation, College Station, TX, USA) was used for the analysis.

2.4 | Ethical Consideration

Ethical clearance was not required for this study as it used publicly available secondary data from the DHS, which had received prior ethical approval from the ICF Institutional Review Board.

According to the DHS, ICF Institutional Review Board ensured that the survey complies with the U.S. Department of Health and Human Services regulations for the protection of human subjects (45 CFR 46). Detailed information on the ethical issues can be accessed via <https://dhsprogram.com/methodology/Protecting-the-Privacy-of-DHS-Survey-Respondents.cfm>. We obtained permission to use the DHS data set from the Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys (MEASURE DHS) before using the data set for publication.

3 | Results

3.1 | Proportion of Adolescent Girls and Young Women Who Engage in Multiple Sexual Partnership In Sub-Saharan Africa

Overall, 4.63% of adolescent girls and young women in SSA engaged in MSPs. The hotspot countries for MSP were Gabon (13.98%), Liberia (11.36%), Cameroon (7.84%), Cote d'Ivoire (7.59%), Kenya (7.33%), Tanzania (6.74%), and Sierra Leone (6.69%). The countries with the lowest proportions of MSP were Ethiopia (0.69%), Burundi (0.80%), Gambia (0.84%), Mali (1.93%) and Malawi (2.06%) (Figure 1).

3.2 | Distribution of Multiple Sexual Partnership Across the Explanatory Variables

Table 2 presents the distribution of MSP across several explanatory variables. Significant differences were observed for age at first sexual intercourse, with the highest proportion reported by those whose first sex happened when they were aged 14 years and below (5.83%). Other variables that showed a significantly high proportion in relation to MSP were those aged 15–19 (5.2%), those who were previously married (10.2%), having higher education (8.5%), those exposed to watching television (6.5%), exposed to listening to the radio (4.9%), and those exposed to reading newspapers or magazines (6.0%). Adolescent girls and young women who used the internet (8.8%), those in the richest wealth index (6.7%), those residing in urban areas (6.8%), and those in the Central sub-region of SSA (7.9%) reported the highest proportion of MSP.

3.3 | Association Between Age at First Sex and Multiple Sexual Partnership

In Figure 2, we present the result of the association between age at first sex and MSP, controlling for the covariates. The results indicate that age at first sex is significantly associated with the likelihood of having MSP. Adolescent and young women whose age at first sex was 15–17 years [aOR=2.28; 95%CI: 1.96, 2.65] and 14 years and below [aOR=3.28; 95%CI: 2.76, 3.89] were more likely to engage in MSP compared with those whose first sexual intercourse occurred at the age 18 years and above. The odds of engaging in MSP was higher among young women (i.e., 20–24 years) [aOR=1.42; 95%CI: 1.26, 1.59] compared to adolescent girls (i.e., 15–19 years). Adolescent girls and young women who were married [aOR = 0.12; 95%CI: 0.10, 0.14] and cohabiting [aOR = 0.37; 95%CI: 0.30, 0.46] were less likely to engage in MSP relative to those who had never been in union. Compared to adolescents who did not watch television, those who watched television were more likely to engage in MSP [aOR = 1.32; 95%CI: 1.15, 1.52]. Those who reported using the internet were more likely to engage in MSP [aOR=1.81; 95%CI: 1.58, 2.07] than those who had not used the internet. Adolescent girls and young women who lived in richer wealth indexed households were more likely to engage in MSP compared to those in the poorest households [aOR = 1.23; 95%CI: 1.01, 1.49].

Additionally, rural residence was found to have a strong negative association with MSP. Adolescent girls and young women residing in rural areas had lower odds of engaging in MSP compared to those in urban areas [aOR=0.86; 95%CI: 0.76, 0.99]. Compared to the central sub-region, women in the southern SSA had lower odds of engaging in MSP [aOR=0.73; 95%CI: 0.57, 0.93].

4 | Discussion

Extant literature has documented the risk that MSP pose to sexual and reproductive health outcomes of women, including the likelihood of unintended pregnancies, STIs, and unsafe abortions [25, 26]. Hence, understanding the factors that influence women's engagement in MSP is vital to designing interventions that promote behavioural change. In this study, we assessed the association between age at first sex and the risk of engaging in MSP among adolescent girls and young women in SSA. Our study shows that only 4.63% of adolescent girls and young women engaged in MSP. This proportion is lower compared to adolescent boys and young men in SSA, where 33% are engaged in MSP [27]. Furthermore, the pooled prevalence is lower than when compared to the 50% that has been reported in Uganda [8]. The observed differences in the findings could be that, unlike Ssekamatte et al.'s [8] study that focused on only those in young psychoactive-substance-users in informal settlements, the current study estimates a pooled prevalence for a general population of adolescent girls and young women.

The findings of this study support the hypothesis that there is a significant association between age at first sex and the

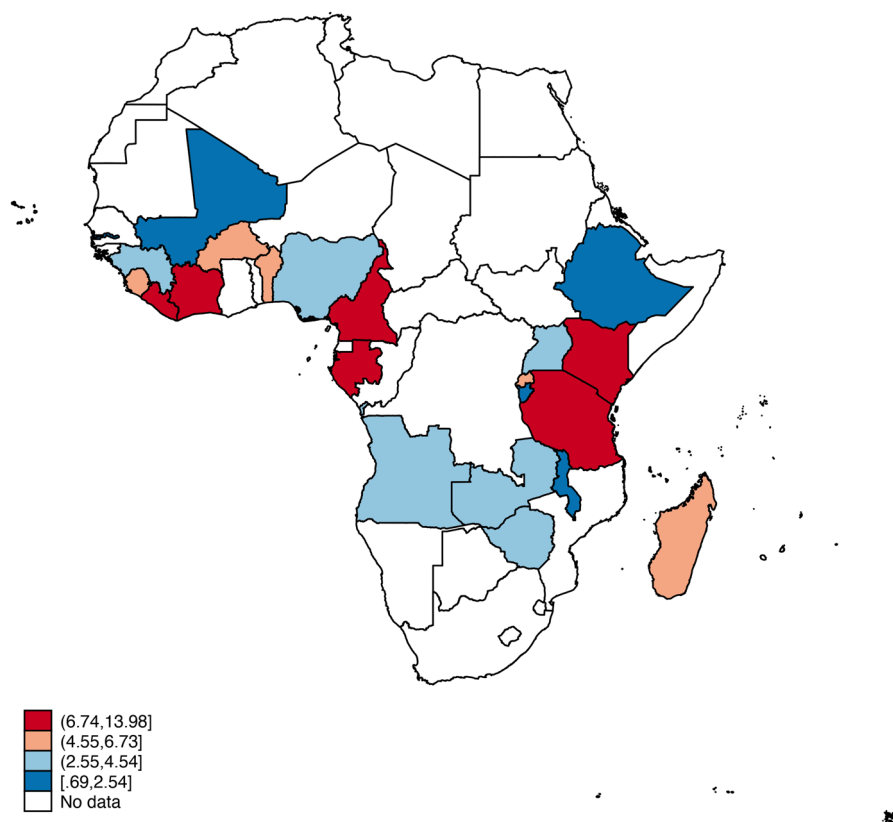


FIGURE 1 | Spatial map showing the proportion of adolescent girls and young women who engage MSP in SSA.

likelihood of engaging in MSP. It is indicative from our study that adolescent girls and young women who had an early sexual debut were more likely to engage in MSP. Similar findings of a positive association between age at first sex and MSP have been reported in studies conducted in Nigeria [1], Eswatini [26], and South Africa [28]. We postulate based on previous literature [29] that young women who have an early sexual debut are likely to face more challenges in accessing sexual and reproductive health information probably due to feelings of shyness and shame caused by negative cultural attitudes early initiation of sex. Hence, those who have an early sexual debut may have limited knowledge and understanding of the potential risks and consequences associated with MSP. They may also have difficulty negotiating safe sex practices and establishing healthy relationships, increasing their vulnerability to engaging in risky sexual behaviours, including MSP.

Consistent with other studies [26, 30], we found a positive association between women's age and the likelihood of having MSP. This association could be influenced by factors such as increased autonomy and independence with age, leading to greater freedom in sexual decision-making. Additionally, younger women may have accumulated more life experiences and may be more likely to engage in diverse social networks, potentially increasing their exposure to different sexual partners than adolescent girls. Given that culturally, SSA countries frown on adolescents engaging in sex, there is the possibility that respondents in this age group may underreport to avoid shame.

Having secondary or higher education was significantly associated with a higher risk of engaging in MSP. This study

is supported by evidence from previous studies [31, 32] that have also found the likelihood of engaging in MSP to be significantly high among adolescent girls and young women with secondary or higher education compared to those with no formal education. While our findings may seem counterintuitive based on common expectations, it is possible that young women pursuing higher education may face challenges such as financial constraints, which may be an incentive for them to engage in MSP. Moreover, the secondary or higher education period often coincides with increased autonomy for adolescent girls and young women in many sub Saharan African countries. During this phase, they may be exposed to new environments, experiences, and social networks that can influence their behaviours, including their sexual relationships. This can create opportunities for exploration and experimentation, including engaging in MSP.

Our study also indicates that residing in a rural area was associated with significantly lower odds of engaging in MSP compared to residing in urban areas. This is corroborated by a study conducted in Nigeria [13] and Malawi [9]. Rural areas often have more traditional and conservative cultural norms and values, which may place a stronger emphasis on monogamous relationships and discourage or stigmatise MSP. Young women in rural communities may be influenced by these cultural norms, leading to lower engagement in MSP compared to their urban counterparts. The study also revealed that women in the Southern SSA were less likely to engage in MSP compared to their counterparts in Central SSA. This finding reflects the varied socio-cultural

TABLE 2 | Distribution of multiple sexual partners across the explanatory variables.

Variable	Weighted <i>n</i> (%)	Engaged in multiple sexual partnership		<i>p</i> value
		No [95% CI]	Yes [95% CI]	
Age at first sex intercourse				< 0.001*
18 years and above	20,892 (30.2)	96.9 [96.5, 97.3]	3.1 [2.7, 3.5]	
15–17 years	36,671 (53.0)	94.9 [94.5, 95.2]	5.1 [4.8, 5.5]	
14 years and below	11,611 (16.8)	94.2 [93.5, 94.8]	5.8 [5.2, 6.5]	
Age (years)				0.001*
15–19	23,047 (33.3)	94.8 [94.4, 95.2]	5.2 [4.8, 5.6]	
20–24	46,127 (66.7)	95.6 [95.3, 95.9]	4.4 [4.1, 4.7]	
Marital status				< 0.001*
Never married	22,798 (33.0)	90.6 [90.0, 91.1]	9.4 [8.9, 10.0]	
Married	32,289 (46.7)	98.9 [98.8, 99.1]	1.1 [0.9, 1.2]	
Cohabiting	10,940 (15.8)	96.4 [95.7, 97.0]	3.6 [3.0, 4.3]	
Previously married	3,147 (4.5)	89.8 [88.2, 91.2]	10.2 [8.8, 11.8]	
Level of education				< 0.001*
No education	14,243 (20.6)	97.7 [97.4, 98.0]	2.3 [2.0, 2.6]	
Primary	22,143 (32.0)	96.2 [95.9, 96.6]	3.8 [3.4, 4.1]	
Secondary	28,843 (41.7)	94.1 [93.6, 94.5]	5.9 [5.5, 6.4]	
Higher	3,945 (5.7)	91.5 [89.6, 93.0]	8.5 [7.0, 10.4]	
Current working status				0.555
Not working	34,107 (49.3)	95.4 [95.0, 95.8]	4.6 [4.2, 5.0]	
Working	35,067 (50.7)	95.3 [95.0, 95.6]	4.7 [4.4, 5.0]	
Watch television				< 0.001*
No	37,277 (53.9)	97.0 [96.7, 97.2]	3.0 [2.8, 3.3]	
Yes	31,897 (46.1)	93.5 [93.0, 94.0]	6.5 [6.0, 7.0]	
Listen to radio				0.002*
No	30,543 (44.2)	95.8 [95.4, 96.1]	4.2 [3.9, 4.6]	
Yes	38,631 (55.8)	95.1 [94.7, 95.4]	4.9 [4.6, 5.3]	
Read newspaper or magazine				< 0.001*
No	57,630 (83.3)	95.6 [95.4, 95.9]	4.4 [4.1, 4.6]	
Yes	11,544 (16.7)	94.0 [93.3, 94.6]	6.0 [5.4, 6.7]	
Use internet				< 0.001*
No	52,146 (75.4)	96.7 [96.5, 96.9]	3.3 [3.1, 3.5]	
Yes	17,028 (24.6)	91.2 [90.4, 92.0]	8.8 [8.0, 9.6]	
Comprehensive HIV/AIDS knowledge				0.030*
No	37,214 (53.8)	95.6 [95.3, 95.9]	4.4 [4.1, 4.7]	
Yes	31,960 (46.2)	95.1 [94.7, 95.5]	4.9 [4.5, 5.3]	
Wealth index				< 0.001*
Poorest	12,274 (17.8)	97.4 [97.0, 97.7]	2.6 [2.3, 3.0]	
Poorer	13,651 (19.7)	96.5 [96.1, 96.9]	3.5 [3.1, 3.9]	
Middle	13,812 (20.0)	95.6 [95.1, 96.1]	4.4 [3.9, 4.9]	
Richer	15,169 (21.9)	94.4 [93.8, 95.0]	5.6 [5.0, 6.2]	
Richest	14,268 (20.6)	93.3 [92.6, 94.0]	6.7 [6.0, 7.4]	
Place of residence				< 0.001*

(Continues)

TABLE 2 | (Continued)

Variable	Weighted <i>n</i> (%)	Engaged in multiple sexual partnership		<i>p</i> value
		No [95% CI]	Yes [95% CI]	
Urban	26,741 (38.7)	93.2 [92.6, 93.8]	6.8 [6.2, 7.4]	< 0.001*
Rural	42,433 (61.3)	96.7 [96.5, 97.0]	3.3 [3.0, 3.5]	
Sub-region				
Central	7,406 (10.7)	92.1 [90.7, 93.3]	7.9 [6.7, 9.3]	
Southern	4,358 (6.3)	97.3 [96.7, 97.8]	2.7 [2.2, 3.3]	
Eastern	29,749 (43.0)	95.7 [95.3, 96.0]	4.3 [4.0, 4.7]	
Western	27,661 (40.0)	95.6 [95.3, 96.0]	4.4 [4.0, 4.7]	

**p* values were generated from the Pearson chi-square test of independence.

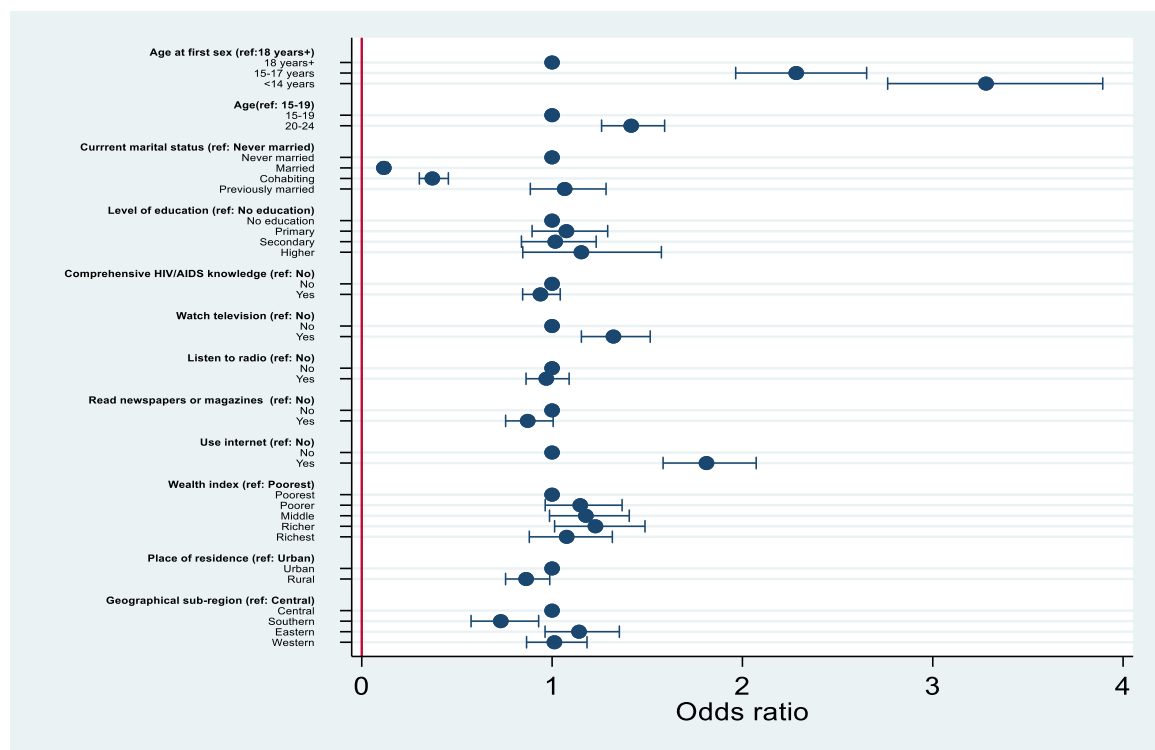


FIGURE 2 | Association between age at first sex and multiple sexual partnership among adolescent girls and young women.

disparities and calls for more research to gain greater insights into this association.

Married and cohabiting adolescent girls and young women were significantly less likely than those who had never been married to engage in MSP. Exavery et al. [33] findings that evermarried and single women are more likely to engage in MSP than women currently in union corroborate the findings from the present study. The observed association between marital status and MSP is expected because in the traditional sub-Saharan African setting, married women are tasked with remaining faithful to their male partners irrespective of what happens. As such, married or cohabiting women who engage in MSP are often ostracised and traditionally this could be a basis for marital dissolution. This

explains the low engagement of married and cohabiting women in MSP.

Our findings also indicate that the likelihood for a woman to engage in MSP increases when they are exposed to the media. This observation diverges from the results of a prior study [34], which reported no significant association between media exposure and women's involvement in MSP. However, our conjecture is that the positive correlation between media exposure and MSP could be attributed to the portrayal of such behaviours in movies, television shows, and music across different media platforms. Through repeated exposure to these depictions, women may gradually internalise and normalise the notion of engaging in MSP, thereby influencing their behaviour over time. This normalisation process could potentially contribute to

the observed increase in the likelihood of women engaging in MSP as a result of media exposure.

4.1 | Policy Implications

The findings of this study emphasise the significance of implementing programmatic measures aimed at discouraging early sexual debut among adolescent girls and young women. By addressing the factors that contribute to early sexual initiation, interventions can help mitigate the likelihood of engaging in MSP. These measures may include comprehensive sexual education programs that provide accurate information about sexual health, contraception, and the potential risks associated with early sexual activity. Additionally, efforts should be made to promote gender equality, challenge harmful gender norms, and empower adolescent girls and young women to make informed decisions regarding their sexual and reproductive health. Our findings highlight a need to consider the multifaceted nature of educational experiences and the potential challenges that young women pursuing higher education may face, including financial constraints. Programmatic interventions should take into account the transitional phase during secondary or higher education. Considering the strong association between employment and engagement in MSP, potential programmatic implications could involve workplace-based interventions. Programs may aim to provide sexual health education in work settings, addressing the challenges associated with increased mobility, disposable income, and exposure to different social circles.

4.2 | Strengths and Limitations

Our study used the recent DHS dataset of sub-Saharan African countries. This large data set offers us the power to extrapolate our findings to the general population of adolescent girls and young women in SSA. The present study is arguably the first to investigate age at first sex and MSP among women at the regional level. However, there were some limitations. Causal association cannot be established between age at first sex and MSP as the DHS uses a cross-sectional design. As a study that used secondary data, some key variables of interest, such as cultural norms, could not be factored into our analyses. Some of our findings, such as the association between education and MSP, could be a result of reverse causality. However, we are unable to prove this in our study.

5 | Conclusion

There is a strong positive association between age at first sex and MSP. Therefore, sub-Saharan African countries must formulate policies and implement programs to discourage early sexual debut. Practically, this can be achieved through the adoption of comprehensive sex education programmes across sub-Saharan African countries. To ensure cost-effectiveness and optimise efforts to reduce MSP, programs aimed at discouraging early sexual debut must prioritise adolescent girls, those residing in urban areas, and those with secondary or higher education. Also, there should be effective regulation of the internet, particularly dating and hook-up sites, to limit its adverse effect on MSP.

Author Contributions

Bright Opoku Ahinkorah: supervision, project administration, methodology, visualization, writing – review and editing, writing – original draft. **Richard Gyan Aboagye:** visualization, writing – review and editing, validation, writing – original draft. **Irene Esi Donkoh:** validation, visualization, writing – review and editing, writing – original draft. **Joshua Okyere:** validation, visualization, writing – review and editing, writing – original draft. **Abdul-Aziz Seidu:** writing – original draft, validation, visualization, writing – review and editing. **Sanni Yaya:** conceptualization, investigation, funding acquisition, writing – original draft, writing – review and editing, validation, methodology, project administration, formal analysis.

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Consent

The authors have nothing to report.

Conflicts of Interest

All authors have read and approved the final version of the manuscript. The corresponding author, [Sanni Yaya], had full access to all data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis. There is no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are openly available in DHS Program at <https://www.dhsprogram.com>.

Transparency Statement

The lead author Azadeh Goodarzi affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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