Sexual and reproductive health service utilization and associated factors among rural adolescents in Dama District, Oromia Regional State, Ethiopia

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ABSTRACT

Background: Sexual and reproductive health (SRH) service utilization remains a significant public health issue which affecting millions of adolescents worldwide. Adolescents aged 15 to 19 are particularly vulnerable to unprotected sexual practices, increasing their risk of unwanted pregnancies and sexually transmitted infections (STIs). However, there is limited evidence on the utilization of SRH service and the associated factors among adolescents residing in rural areas. Thus, this study aimed to determine the utilization of SRH services and its associated factors among rural adolescents in Dama District, Guji Zone, Oromia Regional State, Ethiopia.

Methods: A mixed-methods study was conducted in Dama District from April to May 2022 involving 615 adolescents. A simple random sampling technique was employed to select participants for the quantitative portion, while a purposive sampling method was used for qualitative interviews. Quantitative data were collected using a structured questionnaire, and an interview guide was utilized for the qualitative study through in-depth interviews. The quantitative data were entered into Epi Data version 3.1 and analyzed using SPSS version 26. Descriptive statistics were used to summarize the characteristics of the participants, and a logistic regression model used to identify factors associated with SRH service utilization. Thematic analysis was conducted to assess barriers to SRH service utilization.

Results: The utilization of SRH service in the past twelve months was 18.2% (95% confidence interval: 15%–21.3%). Family planning was the most utilized service, with a rate of 71.4%. Not living with both parents (AOR = 2.7, 95% CI: 1.3–6.0), having discussions about family planning (AOR = 10, 95% CI: 6.0–19.0), engaging in discussions about voluntary counseling and testing (VCT) for HIV/AIDS (AOR = 2.6, 95% CI: 1.4–4.0), and possessing good knowledge of SRH (AOR = 3.4, 95% CI: 1.6–7.0) were significantly associated with SRH service utilization.

Conclusions: A considerable proportion of adolescents in rural areas are not utilizing SRH services. Enhancing discussions about family planning, VCT for HIV/AIDS, and increasing knowledge of SRH are crucial for improving service utilization among adolescents living in these areas.

Keywords: Adolescent, Sexual and reproductive health, Adolescent health, Infectious diseases

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BACKGROUND

The WHO defines adolescents as individuals between the ages of 10 and 19 (1). This stage is characterized by significant physiological, social, and psychological changes that place them at a high risk of SRH problems (1). Globally, there are 1.25 billion adolescents, with 513 million aged between 15 and 19, and 85% of them living in low-income countries (2). Sub-Saharan Africa is home to over 250 million adolescents aged 10 to 19 years (3). In Ethiopia, one-fifth of the population consists of adolescents, and among them, four-fifths live in rural areas (2,4).

The SRH care is defined as a set of methods, techniques, and services designed to improve reproductive health and well-being by preventing and addressing sexual health issues (4). The utilization of reproductive health services is a crucial component in preventing various sexual and reproductive health issues among adolescents, including unwanted pregnancies, unsafe abortions, and STIs, including HIV/AIDS (5). The WHO advocates for universal access to SRH services for adolescents, including information and counseling on SRH issues, family planning, voluntary counseling and testing for HIV/AIDS, abortion care, and the diagnosis and treatment of STIs (4).

About 1.8 billion young people have unmet reproductive health needs in rural settings across the world (6). Several health problems are associated with adolescents and young people, including 8.7 million abortions, 41% of new HIV infections, and a high rate of STIs (7). In addition, pregnant adolescents are more likely than adults to experience unsafe abortions; approximately 3.2 million unsafe abortions occur annually among girls aged 15 to 19 years worldwide (8). Furthermore, unsafe abortions are an important factor in maternal health, contributing to an estimated 22 million cases of morbidity annually and accounting for 4.7% to 13.2% of maternal mortality worldwide (9).

In developing countries, there are nearly 12.8 million births among adolescents aged 15 to 19 years, with a large proportion of these pregnancies being unplanned (2). A cross-sectional study conducted in India shows that 84% of females aged 15 to 24 decided to have an abortion before the end of the first trimester, but only 75% were able to access the service (10). In Africa, about 75% of youth engage in higher-risk sexual activities, and approximately 90% of male adolescents aged 15 to 19 participate in high-risk sexual intercourse (11).

In sub-Saharan Africa, adolescent childbearing, HIV transmission, and low coverage of modern contraceptives are among the most pressing issues in many countries, including Ethiopia (3). Adolescents' awareness of available services is limited, and the use of contraceptives and access to family planning counseling services are significant challenges (12). Furthermore, 500,000 young people are infected with STIs, including HIV/AIDS, every day, and the WHO estimates that adolescent HIV infections account for 60% of all new HIV infections in Africa (2,12). Sub-Saharan Africa remains the most affected region in the world, with an estimated 22.5 million people living with HIV/AIDS. Approximately 1.7 million new infections occur annually in this region (13).

In Ethiopia, about 40% of adolescents marry at a young age, contributing to a teen pregnancy rate of 12%, which is among the highest in the world (6). However, about 34% of pregnancies among teenagers aged 15 to 19 in the country are unintended, making them a leading cause of induced abortion and resulting complications, including morbidity and mortality (6). This situation also contributes to an increase in the number of orphans and abandoned children (14,15). In addition, approximately 26% of the HIV-positive population in Ethiopia is aged between 10 and 24 years (6). In addition to misconceptions about HIV/AIDS, early unprotected sexual activity and unsafe abortions are prevalent among rural adolescents (4,16). Furthermore, the perceived SRH problems that young people encounter include unintended pregnancy (57.5%), STI/HIV/AIDS (55.8%), and abortion (43.2%) (14). Moreover, about 83.9% of adolescents aged 15 to 19 were affected by unsafe abortions (9).

Despite the 2030 targets of Sustainable Development Goal 3, which aims to ensure healthy lives and promote well-being for all at all ages, rural adolescents continue to underutilize sexual and reproductive health services (3). In rural areas, the utilization of condoms and modern contraceptive services is low compared to urban settings, where residents have better access to services such as contraceptives, condoms, safe abortion care, and different social norms (3).

Despite their historical and geographical challenges, the use of SRH services by rural adolescents remains under-researched. Existing studies predominantly focus on urban adolescents, leaving a significant gap in understanding the factors influencing SRH service utilization in rural areas. Additionally, the reasons for the low utilization of sexual and reproductive health services are not well understood, and there is no consistent finding regarding the utilization and associated factors in Ethiopia. There is significant variation in SRH service utilization, with rates of 58.6% in West Arsi (6) and 8.4% in the Mecha District of Amhara Region (17). Many rural adolescents in the Dama District, particularly those aged 15 to 19, are affected by unwanted pregnancies, STIs including HIV/AIDS, and unsafe abortions, which can negatively impact their health and lead to economic and social issues for current and future generations

Thus, this study aimed to fill evidence gaps by identifying the factors associated with SRH service utilization and addressing the challenges faced by rural adolescents in the Dama District. Additionally, this study will provide baseline information for governmental and non-governmental organizations to plan and improve adolescent SRH service utilization. Furthermore, the information generated through this research will assist health institutions and healthcare providers in designing appropriate programs to address the SRH service utilization issues faced by adolescents. This will help improve adolescents' SRH service utilization, thereby reducing mortality and morbidity among adolescents in the study area.

METHODS

Study area and period

The study was conducted in Dama District, Guji Zone, Oromia Regional State of Ethiopia, from April 19 to May 19, 2022. Dama District is located 410 km southeast of Addis Ababa and 420 km from the zonal administrative center in Negele Town. The district comprises two towns and 19 rural kebeles (the smallest administrative units in Ethiopia). There are four public health centers and 19 health posts in the district. According to district administration records, the total population of Dama District is 84,773, with 80,675 residents (95.2%) living in rural areas, and 21,619 (25.5%) are in the age group of 15–19 years. From the total population of Dama District, 20,574 (24.3%) of adolescents (15-19 years old) reside in the rural part of the district. The total number of households (HH) in the district is 16,463, and the average population density is 45 people per square kilometer in 2022. According to the district health bureau report, there is only one governmental youth-friendly service center providing sexual and reproductive health services specifically for adolescents in the district.

Study design and population

A mixed-methods approach was employed, utilizing a community cross-sectional design that included both quantitative and qualitative data. The source population consisted of all adolescents aged 15 to 19 years who resided in the rural areas of Dama District during the study period. The study population for the quantitative study included all adolescents aged 15 to 19 years living in the selected kebeles of Dama District during the study period. However, the study population of qualitative study was healthcare providers and adolescents residing in Dama District during the same time. Rural adolescents who had resided in the study area for less than six months prior

to the study period and those who needed assistance were excluded from the study.

Sample size determination and sampling methods

The sample size was calculated using a single population proportion formula, assuming a 95% confidence level, a 0.04 margin of error, a 37% true population proportion of SRH service utilization, and a 10% non-response rate (18). Accordingly, a total sample size of 615 was determined and included in the quantitative part of this study. Nineteen respondents participated in in-depth interviews: seven healthcare providers and twelve adolescents for the qualitative interviews. Out of 19 kebeles, six were selected using a simple random sampling method. A list of households with adolescents aged 15-19 from the health post family folder served as the sampling frame. Sample sizes were proportionally allocated based on the number of households. If a household had more than one adolescent, one was chosen by lottery. A purposive sampling technique was employed to select respondents for the qualitative study. Information saturation was reached after conducting in-depth interviews with seven healthcare providers and twelve adolescents.

Data collection procedures

Data were collected using a pretested structured questionnaire through face-to-face interviews for the quantitative study. The questionnaire was adapted from various relevant sources and included questions on socio-demographic characteristics, sexual history, SRH service utilization, family planning service utilization, VCT for HIV/AIDS service utilization, and STI diagnosis and treatment service utilization, as well as knowledge and attitudes (2, 6,11).

Open-ended semi-structured interview questions were used to collect data for the qualitative part of the study until information saturation was reached. These open-ended questions aimed to gain insights into issues that could not be addressed by the quantitative survey and to support additional findings on SRH service utilization and associated factors. The qualitative study examined variables such as attitudes, knowledge, waiting time, cultural norms, beliefs, cost of services, service availability, distance to health facilities, and fear of being detected in relation to service utilization. Data was gathered in a suitable and quiet location for participants. The interviews were facilitated by a reporter, note-takers, and an interview checklist. Data collection was carried out by six teachers with bachelor's degrees and supervised by two health professionals with master's degrees from the health discipline. The most appropriate times to reach participants were before and after school, as this fit their schedules around home.

Data quality control

A pretest was conducted in another kebele outside the actual study area with 5% of the study sample size to assess the clarity of the data collection tools. Based on the pretest results, corrections were made to the questions. Training was provided for data collectors on the study's objectives, procedures, and questionnaires. Data collection was supervised on-site by the principal investigator and supervisor. The principal investigator also checked the filled questionnaires daily during data collection to ensure their completeness. Data cleaning and cross-checking were performed before analysis.

Rereading was used to ensure consistency and minimize the loss of ideas or concepts during translation, result writing, and report presentation for qualitative data. The objective of the study was clarified for the participants to facilitate the gathering of relevant qualitative information. The interviews were supported by a reporter, note-takers, and an interview checklist to ensure accurate recording of qualitative data.

Data processing and analysis

Data were entered into Epi Data version 3.1 and then exported to the Statistical Package for Social Sciences (SPSS) version 26 for analysis. Frequencies, percentages, and odds ratios were used to summarize the data. A logistic regression model was employed to assess factors associated with SRH service utilization. Model fit was evaluated using the Hosmer-Lemeshow goodness-of-fit test, and multicollinearity was assessed using variance inflation factors. Potential confounding variables were controlled for using a multivariable logistic regression model. In the bivariate analysis, variables with a p-value < 0.25 were included in the multivariable analysis. Adjusted odds ratios with 95% confidence intervals were calculated to determine the strength of the associations. The level of significance was set at a p-value < 0.05. The study was primarily quantitative, with qualitative data used to support the quantitative findings. Qualitative data were transcribed verbatim, typed, and translated from Afan Oromo to English by the investigators. The findings were manually analyzed, compiled and presented in a narrative format.

RESULTS

Socio-demographic characteristics

A total of 615 adolescents participated in this study, yielding a response rate of 100%. Half of the respondents (51.5%) were male, with a mean age of 17.4 years (SD = 1.3 years). Most of the adolescents, 566 (92%), were not married, and 541 (88%) had attended school (Table 1).

Table 1: Socio-demographic characteristics among rural adolescents (15-19 years old) in Dama District, Guji Zone, Ethiopia, 2022 (n = 615)

Variables	Frequency	%

Sex	Male	317	51.5
	Female	298	48.5
Marital status	Single	566	92
	Married	49	8
Currently living with both parents	Yes	511	83.1
	No	104	16.9
Family size	≤5	200	32.5
	≥5	415	67.5
Educational status	Illiterate	56	9.1
	Primary	232	37.7
	Secondary & above	327	53.2
Current schooling	In-school	541	88
	Out-of-school	74	12
Education status of father	Illiterate	161	26.2
	Primary	269	43.7
	Secondary & above	185	30.1
Education status of Mother	Illiterate	239	38.9
	Primary	291	47.3
	Secondary & above	85	13.8

Sexual and reproductive health history of adolescents

Of the total respondents, 71 (11.5%) had discussions with a parent about SRH. Half of the respondents (50%) noted the availability of SRH services, while 63.4% were aware of the costs associated with those services and 63.1% reported experiencing judgmental attitudes from healthcare providers. About 21.3% of the respondents lived less than 30 minutes away from a health facility. Additionally, 48 (28.7%) of the adolescent girls faced unwanted pregnancies (Table 2).

Table 2: Information related to SRH service utilization of rural adolescents (15-19 years old) in Dama District, Guji Zone, Ethiopia, 2022 (n = 615)

Variable		**Frequency**	**%**
Discussed about SRH service with parents	Yes	71	11.5
	No	544	88.5
Ever discussed about FP service	Yes	154	25
	No	461	75
With whom about FP service discussed	Family	47	30.5
	Friends	66	42.9
	Sexual partner	17	11
	Teacher	12	7.8
	Health worker	102	66.2
History of STIs in the past one year	Yes	61	9.9
	No	554	90.1
Ever discussed about VCT for HIV/AIDS service	Yes	167	27.2
	No	448	72.8
With whom discussed about VCT of HIV/AIDS service	Health workers	87	52.1
	Friends	82	49.1
	Teacher	27	16.2
	Sexual partner	31	18.6
	Family	34	20.4
Ever had sexual partner	Yes	200	32.5
	No	415	67.5
Ever had sexual intercourse	Yes	309	50.2
	No	306	49.8
Frequency of sexual intercourse (n = 306)	Once	45	14.6
	More than once with same person	182	58.9
	More than once with different persons	82	26.5
History of unwanted pregnancy	Yes	48	28.7
	No	119	71.3

FP- Family planning; SRH-sexual and reproductive health; VCT-voluntary counselling and testing

Knowledge of adolescents on SRH services

Among the 331 respondents (53.8%) who had ever heard about SRH services, 237 (71.6%) learned about them from health service providers. Most of the respondents (68%) were aware of family planning, while 60 (18.1%) were aware of abortion services. Of the total respondents, 136 (22.1%) perceived a risk of contracting HIV/AIDS, and 362 (58.9%) had good knowledge of SRH services, while 41.1% poor (Fig 1).

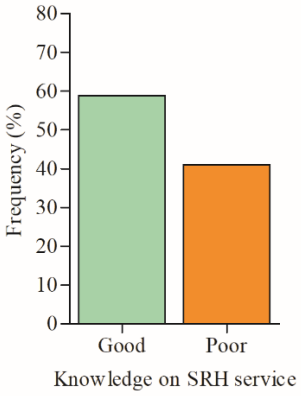

Figure 1: Knowledge level of rural adolescent on SRH service utilization in Dama District, Guji Zone, Ethiopia, 2022 (n = 615)

The respondents also indicated that they sometimes discuss about HIV and unwanted pregnancy with their friends. One respondent said, "*I talk to my mother, but most of the time I don't share with her because I feel shy. So, I have to ask friends who have experienced about those things. I can consult them about how to I can get abortion service, prevent HIV, and avoid pregnancy, as well as the ways one can acquire HIV*" (16-year-old female adolescent). However, majority considered SRH to be solely about women's reproduction: *"I believe that only married men and women with children are concerned about sexual and reproductive health issues"* (18-year-old male adolescent).

The respondents mentioned how they obtain information on SRH: *"One day, my father and mother had a conflict about family planning because he didn't want to consider it. At that time, I secretly asked a health worker about it. I learned about family planning methods such as pills, injectables, and implants, and I think condoms are also used to prevent HIV/AIDS. I heard that HIV/AIDS testing services are necessary for anyone who is sexually active."* (17-year-old female adolescent)

Moreover, the respondents explain about SRH as: *"I don't have good information about reproductive health services, but I believe these services are necessary for pregnant mothers and for those who engage in unprotected sexual intercourse to prevent unwanted pregnancies and AIDS. Facilities that provide family planning and HIV/AIDS services include government health centers and hospitals, but I'm not sure if there are other non-governmental institutions that offer these services."* (19-year-old female adolescent)

Attitude of adolescents toward SRH services utilization

The findings of this study indicated that 499 (81.1%) of adolescents had a positive attitude towards SRH service utilization, while 116 (18.9%) had a negative attitude. In-depth interviews also revealed that the adolescents believe that family planning harms their future fertility; thus, they question why they should utilize the service. They think that using family planning could damage their future fertility or that prolonged use could lead to a high number of abortions," said a 34-year-old female public health officer. The respondent expressed her attitude towards family planning methods, stating: 'The implant moves in the body and can cause health problems such as infertility, abdominal distension, weight loss, menstrual irregularities, and even death",' said a 15-year-old female adolescent.

Utilization of SRH services

Out of 615 rural adolescent respondents, 112 (18.2%, 95% CI: 15%–21.3%) reported utilizing at least one SRH service in the past twelve months (Fig 2).

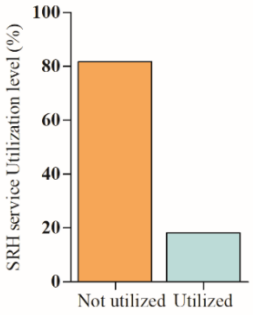

Figure 2: Sexual and reproductive health service utilization among rural adolescents (15-19 years old) in Dama District, Guji Zone, Ethiopia. 2022(n = 615)

Types of sexual and reproductive health services utilization

The types of SRH services most utilized by adolescents (71.4%) were family planning, while the least utilized (13.4%) were abortion services. The family planning methods used included condoms (53.3%), injectables (43.3%), oral contraceptives (14.4%), and implants (4.5%). The family planning services were primarily accessed at health posts (51.1%), followed by health centers (44.4%), hospitals (14.4%), and clinics (7.8%). In contrast, VCT for HIV/AIDS service was utilized at health centers (84.5%), hospitals (21.1%), and clinics (11.3%) (Fig 3).

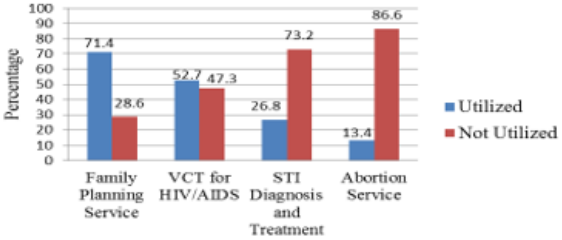

Figure 3: Types of sexual and reproductive health service utilization among rural adolescents (15-19 years old) in Dama district, Guji zone, Ethiopia, 2022 (n

= 112) *(STI-sexually transmitted infection; VCT-voluntary counselling and testing)*

Adolescents utilized SRH services after being exposed to various sexual health-related and socially taboo issues. One adolescent explained: "*I want to learn, but my parents are forcing me to marry. After being married for three months, my husband went to Shakiso to mine for gold to earn an income. He stayed there for two months, then came home to visit me every three to five months. After around two years of marriage, I became pregnant and went to health centers for antenatal care (ANC) follow-up. The midwife told me that I had been exposed to HIV/AIDS, but I rejected that diagnosis because I never had sexual intercourse without my husband. She advised me to bring my husband, but he refused to get tested voluntarily. After my husband died, I started HIV/AIDS treatment because I was also severely ill, and I live with my child who is affected by HIV/AIDS. I lost everything because of my parents.*" (19-year-old female adolescent)

Moreover, the adolescent explained how they were exposed to unwanted pregnancy: "I went to An-fale town after finishing grade eight to learn grade nine, and my parents gave me money for house rent. After a few months, I met my classmate, and sometimes he came to my home, and we studied together. *However, one day we have had sexual intercourse unintentionally. This activity continued, and I discovered my pregnancy after a few months when my abdomen began to grow. I wore clothes that hid my pregnancy, and I was afraid of what my family would think if they saw me. I delivered the baby in a rented house. After four days, I secretly placed my child in front of my parents' house. They saw the child and took him home happily because they wanted a child, but if they knew he was mine, they would kill both me and the baby. Now the child is one year old, but they still do not know. I am afraid to tell them, but now I use implants to prevent pregnancy." (18-year-old female adolescent)*

Reasons for not utilizing SRH services

The majority (57.6%) of adolescents did not utilize SRH services due to fear of being seen by others, followed by concerns about the distance to the health facility (44%) (Fig 4).

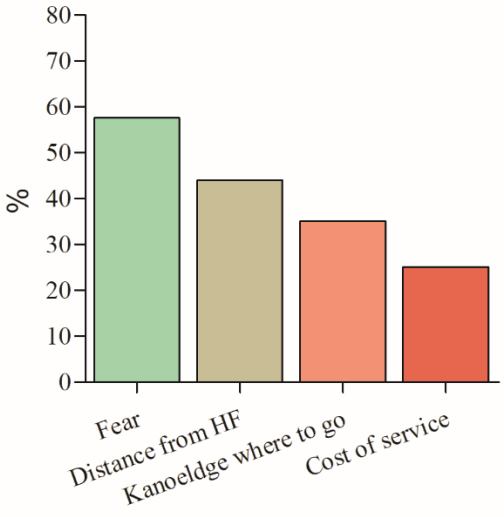

Figure 4: Reason for not utilizing SRH service among rural adolescents (15-19 years old) in Dama District, Guji Zone, Ethiopia, 2022 (n = 503)

In the qualitative interview, adolescents reported the inaccessibility of SRH services due to the distance from health facilities:" Adolescents *had little access to services because of the distance to health facilities, along with uncomfortable road conditions, and some didn't even know where the services were located. Most rural adolescents come from low-income families, and many are not covered by health insurance. This makes it difficult for them to afford service use.*'" (29-year-old male nurse)

Factors associated with SRH service utilization

In the bivariate analysis, variables such as marital status, educational status, having sexual partners, not living with both parents, having ever had sexual intercourse, discussing family planning, a history of STI in the past year, discussing VCT for HIV/AIDS, and good knowledge and attitude towards SRH services were found to have p-values less than 0.25 and were included in the multivariable logistic regression model (Table 3).

In the multivariable logistic regression model, not living with both parents (AOR = 2.7; 95% CI: 1.3–5.7), having ever had sexual intercourse (AOR = 4.3; 95% CI: 2.1–9.0), discussing family planning with parents (AOR = 10; 95% CI: 6.0–19.0), having a history of STI in the past year (AOR = 8.8; 95% CI: 4.0–9.0), discussing VCT for HIV/AIDS (AOR = 2.6; 95% CI: 1.4–4.7), and having good knowledge about SRH services (AOR = 3.37; 95% CI: 1.6–7.0) were significantly associated with SRH service utilization among adolescents living in rural area (Table 5).

The qualitative data analysis also supported the findings of the quantitative results, in which respondents explained their use of SRH services in the absence of family: "*When I live with my family, I fear taking injectable family planning, but when I'm alone, I get injectable family planning from the health post because my family doesn't permit injectable family planning for unmarried women.*" (19-year-old female adolescent). Moreover, a 35-year-old male nurse noted

that adolescents seek SRH services after having unprotected sexual contact. He explained: "*Adolescents most of the time come after having unprotected sexual intercourse. Females come for pregnancy tests once they notice a missed menstrual cycle, while males come for HIV testing.*"

The respondent also explained the use of VCT services: "*Adolescents who discussed the importance of family planning, counseling, and testing for HIV/AIDS with health workers were more likely to use SRH services because they gained knowledge about the importance of these services and developed confidence.*" (27-year-old male health officer). Furthermore, the respondent's explanation supported the qualitative findings: "*In my health facility, most of the time, those adolescents who understand the importance of HIV/AIDS testing are more likely to use the service. Adolescents who know about the importance of condoms often come after 1:00 PM because they fear being seen during the day when obtaining condoms, as they are aware of the risks and benefits of these services.*" (28-year-old male nurse).

DISCUSSION

The aim of this community-based study was to assess SRH service utilization and associated factors among rural adolescents aged 15–19 years. The prevalence of SRH service utilization in the past twelve months was 18.2%, indicating that the majority of rural adolescents in the study area are not utilizing SRH services. The findings of the present study are in line with previous studies reported from Northwest Ethiopia (17) and Western Ethiopia (7). However, they are lower than findings from other studies in Northwest and Northern Ethiopia (18, 19, 20). Additionally, the current findings are lower than those reported from the West Arsi Zone (6), and North Shewa Zone, Amhara Regional State of Ethiopia (4). In contrast, the current study's findings are higher than those reported from Wollega (21). This variation may be due to differences in study area, study population, and the availability and accessibility of SRH service facilities. Furthermore, a study reported from West Arsi Zone was institutional-based and involved both urban and rural college students aged 15–24 years, whereas the present study was community-based and included only rural adolescents aged 15–19 years.

Table 3: Factors associated with SRH service utilization among rural adolescents (15-19 years old) in Dama District, Guji Zone, Ethiopia, 2022

Variable		SRH service utilization		COR (95% CI)	AOR (95% CI)
		Yes, n (%)	No, n (%)		
Marital status	Single	97 (15.8)	469 (76.3)	1.0	1.0
	Married	15 (2.4)	34 (5.5)	2.1(1.1–2.4)*	1.2(0.4– 23.4)
Live with both parents	Yes	85 (13.8)	426 (69.3)	1.0	1.0
	No	27 (4.4)	77 (12.5)	1.8(1.0– 2.9)	2.7(1.3–5.7)**
Educational status	Illiterate	6 (1.0)	50 (8.1)	1.0	1.0
	Elementary	36 (5.8)	196 (31.9)	2.3(0.9–5.5)*	1.88(0.5–7.0)
	Secondary& above	70 (11.4)	257 (41.8)	1.5(0.9–2.3)*	1.98(0.55–7.0)
Having sexual partners	Yes	63 (10.2)	137 (22.3)	1.0	1.0
	No	49 (8)	366 (59.5)	0.3(0.2–0.4)*	0.8(0.42–1.6)
Ever had sexual intercourse	Yes	90 (14.6)	219 (35.6)	5.3(3.2–8.7)	4.3(2.1–9.0)**
	No	22 (3.6)	284 (46.2)	1.0	1.0
Discussed on family planning service	Yes	83 (13.5)	71 (11.5)	17.4(10.0–28.0)	10.0(6.0–19.0)**
	No	29 (4.7)	432 (70.3)	1.0	1.0
Ever had history of STI	Yes	35 (5.7)	26 (4.2)	8.3(4.7–14.0)	8.8(4.0–19.0) **
	No	77 (12.5)	477 (77.6)	1.0	1.0
Discussed VCT for HIV/AIDS	Yes	66 (10.7)	101 (16.4)	5.7(3.7–8.7)	2.6(1.4–4.7)**
	No	46 (7.5)	402 (65.4)	1.0	1.0
Knowledge	Good	100 (16.2)	262 (42.6)	7.66(4.1–14.0)	3.37(1.6–7.0)**
	Poor	12 (2)	241 (39.2)	1.0	1.0
Attitude	Positive	96 (15.6)	403 (65.5)	1.5(0.8–2.6) *	1.47(0.7–3.2)
	Negative	16 (2.6)	100 (16.3)	1.0	1.0

**Significant at p value <0.25; **Significant at p value (<0.05); SRH-sexual and reproductive health; COR-Crude odds ratio; AOR-Adjusted odds ratio; CI-Confidence interval, 1-Reference; VCT-voluntary counselling and testing.*

Family planning service utilization (71.4%) in the present study was greater than the findings of previous studies reported from Asia and the Pacific (10), Uganda (22), Nigeria (23), West Arsi Zone (6), Mada Walabu District (13) and Mecha District (17). This discrepancy may be attributed to the fact that the study in the West Arsi Zone included both urban and rural college students aged 15–24 years, while the current study focused solely on rural adolescents aged 15–19 years. Additionally, there are likely more opportunities to access services in urban areas than in rural ones, due to an information gap among rural adolescents, as more government and non-government health facilities are established in urban areas.

In the present study, the utilization of VCT for HIV/AIDS was greater than the results of previous studies reported from Asia and the Pacific (10), Kenya (24), Kachabirra District (8), Anchar District 45.8% (2). However, it was lower than the findings from studies in Mecha District (17) and West Arsi Zone (6). This discrepancy might be due to differences in study

area, population, and accessibility of services. Moreover, the inconsistency between the present study and previous findings is noteworthy; studies reported from Mecha and West Arsi were institution-based and included both urban and rural adolescents aged 15 to 24, while the present study was community-based and included only rural adolescents aged 15 to 19 years.

The findings of STI diagnosis and treatment (26.8%) service utilization was slightly higher than that for the West Arsi Zone, which was 21.7% (6), and significantly greater than the 2.5% reported in a school-based cross-sectional study conducted among high school students in Addis Ababa (11). This difference could be explained by the fact that the study in Addis Ababa included urban high school students aged 15–24, who are generally more knowledgeable about STI prevention and treatment. In contrast, the current study focused on rural adolescents aged 15–19, who may have less awareness, resulting in urban participants being more engaged in prevention activities rather than seeking diagnosis and treatment after potential exposure.

According to the findings of the present study, only 15 (13.4%) of the 48 adolescent girls with a history of unwanted pregnancy received abortion services. This indicates that many adolescent girls are affected by SRH related issues, such as unwanted pregnancy and unsafe abortion. This finding is greater than that of a study conducted in Kachabirra District, which reported a rate of 5.7% (8). However, it is lower than the 26% reported from West Arsi Zone (6). This inconsistency may be due to the fact that participants in this study were from rural areas, where conservative cultural and religious practices discourage early sexual exposure more than in urban settings.

Findings from the qualitative data also indicated that feelings of shame, long waiting times, fear of being seen, and a lack of privacy regarding culturally unacceptable behaviors before marriage were significant factors hindering the utilization of SRH services. The findings of the current study align with the previous studies conducted in Saudi Arabia (25) and Southwestern Oromia (26). This implies a need to address these barriers by working with community leaders, religious leaders, health institution leaders, and families.

The findings of this study indicated that adolescents who had not lived together with both parents were 2.7 times more likely to use SRH services than those who had lived with both parents. These findings are consistent with an institutional-based cross-sectional study conducted in the West Arsi Zone (6), and align with community-based cross-sectional studies conducted in (14) and Debre Berhan town (4). A possible explanation for this could be that adolescents have more freedom to access SRH services when not living with their parents, as cultural norms often discourage the use of such services before marriage. Furthermore, living with family and being under parental control may protect adolescents from sexual exposure and limit their use of these services (7). However, this finding contradicts a community-based study conducted in Kachabirra District (8). Therefore, further studies are required to confirm these discrepancies.

In the present study, it was found that individuals who had ever had sexual intercourse were 4.3 times more likely to utilize SRH services than those who had not. This finding aligns with studies conducted in West Ethiopia (26), Aleta Wondo District (18), East Wollega Zone (21) and Awabel District (14). This may be because individuals who have had sexual encounters are more likely to seek family planning, STI diagnosis and treatment, VCT service for HIV/AIDS, or abortion services when they are concerned about the risks associated with unprotected sexual activity.

This finding revealed that individuals who had discussed family planning services were 10 times more likely to utilize sexual and reproductive health (SRH) services than their counterparts. This finding is supported by a community-based cross-sectional study conducted in Northeast Ethiopia (27) and Anchar district (2) and Northeast Ethiopia (27). This can be justified by the fact that open discussions about family planning services increase awareness and reduce feelings of shyness and fear of being seen while accessing these services.

The findings also indicated that adolescents who had ever discussed VCT for HIV/AIDS were 2.6 times more likely to utilize SRH services than their counterparts. This is consistent with a cross-sectional study conducted at Mada Walabu University, which showed that those who had discussions about VCT for HIV/AIDS with a health professional were twice as likely to use the service (13). This result is further supported by a cross-sectional study conducted in the Amhara region (19). This could be explained by the fact that discussions about VCT for HIV/AIDS help adolescents exchange information and experiences that assist them in utilizing sexual and reproductive health services.

Participants with good knowledge of SRH services were 3.37 times more likely to utilize these services than those with poor knowledge. This finding is consistent with studies conducted in the Assosa Zone (9) and South Omo Zone (1). Adolescents with good knowledge of SRH services are likely to have better decision-making skills, which increases their likelihood of seeking these services when needed (4).

The present study has limitations. The main limitation was examination of SRH service utilization in the past twelve months. This could prone to recall bias, and either underestimate the service utilization. In addition, the present study was conducted in adolescents living in one rural district, which limits the generalizability of the findings of the current study to national level adolescents.

CONCLUSIONS

Most adolescents residing in rural areas are not utilizing SRH services in the past one year before the study. The study identified several key factors influencing SRH service utilization among rural

adolescents, including not living with both parents, previous sexual activity, discussing family planning, having good knowledge, and discussing VCT for HIV/AIDS. Promoting SRH discussions and raising awareness in rural areas are crucial to increase SRH service utilization among adolescents living in rural areas.

List of abbreviations: AOR-Adjusted Odds Ratio; CI-Confidence Interval; COR-Crude Odds Ratio; FP-Family planning; SRH-Sexual and reproductive health; STI-sexually transmitted infection; VCT-Voluntary counseling and testing; WHO-World health organization-

Declaration

Ethical consideration

Ethical clearance was taken from institutional review board of Salale University (ref.no.SU/CAGC/878/2014). Written informed consent and assent were obtained from the students and the family respectively before data collection. Confidentiality and anonymity of the participants were ensured throughout the study process.

Consent for publication: Not applicable

Availability of data and materials

Data will be available upon request from the corresponding author.

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