Adolescents Sexual and Reproductive Health: A Survey of Knowledge, Attitudes and Practices in the Tamale Metropolis, Ghana

Inusah Abdul-Wahab[1], Asumah Mubarick Nungbaso[2], Ruth Nimota Nukpezah[3] and Edem Kojo Dzantor[4*]

[1]*Department of Global Health, School of Public Health, University for Development, P.O. Box TL1350, Tamale, Northern Region, Ghana.*
[2]*Ghana Health Service, Kintampo Municipal Hospital, P.O. Box 192, Kintampo, Bono-East Region, Ghana.*
[3]*Department of Preventive Health Nursing, School of Nursing and Midwifery, University for Development Studies, P.O. Box TL1350, Tamale Northern Region, Ghana.*
[4]*Department of Epidemiology and Biostatistics, School of Public Health, University for Development Studies, P.O. Box TL1350, Tamale Northern Region, Ghana.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

Background/Introduction: Good knowledge, attitudes and skills on sexual and reproductive health are important conditions to promote the well-being of adolescents. The study assessed the knowledge, attitudes and practices on sexual and reproductive health among adolescents in the Tamale Metropolis, Northern Region, Ghana.
Methods: A community based descriptive cross-sectional survey was conducted among the four sub-metros of Tamale. Using an electronically structured questionnaire, data comprising sociodemographic characteristics, knowledge, attitudes and practices of sexual and reproductive

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Corresponding author: E-mail: edemdzantor2011@gmail.com;

health were collected from study participants. The data was analyzed using Microsoft Excel (Version 2019) and SPSS version 24. Descriptive analysis, chi-square test and binary logistic regression models were performed.

Results: The study involved 617 participants with mean age 16.5 ± 1.6 and ranged between 10 and 19 years with females being the majority [55.30% (341)]. Poor knowledge, attitudes, and practices towards sexual and reproductive health was 67.60% (417), 77.70% (479) and 67.70% (418) respectively. Knowledge score was found to be significant between category of school (p=0.070), gender (p=0.003), religion (p=0.010) and education (p=0.008). Attitudes of study participants was significantly associated with age (p<0.001), and the job of household head (p=0.038). Practices of sexual and reproductive health was significantly associated with the category of schools (p=0.044). Females were 1.6 times more likely to have sufficient knowledge on sexual and reproductive health as compared to males [AOR-1.6; 95% CI (1.13-2.30), P=0.009]. Adolescents within the ages of 10 to 15 years were 2.33 more times likely to exhibit favorable attitude towards sexual and reproductive health (SRH) right issues as compared to their colleagues between the ages of 16 to 19 years [AOR=2.33, 95%CI (1.45-3.77), P<0.001]. Adolescents in senior high school were 1.4 more likely to have good practice of SRH as compared to their counterparts in junior high school and below [AOR=1.4, 95% CI (0.98-1.99), P=0.06].

Conclusion: Knowledge, attitudes and practices of sexual and reproductive health was poor. There is the need to engage in public health education and promotion among adolescents on sexual and reproductive health in the Tamale Metropolis.

1. INTRODUCTION

Adolescence is a period of rapid growth and sexual maturity that occurs between the ages of 10 and 19 and it marks the start of adulthood [1]. It is also a period of transition in one's physical, psychological, emotional, and social well-being [2,3]. During this phase, health and social problems may be severe. According to the World Health Organization (WHO), the most serious health issues among adolescents are early pregnancy, childbirth, HIV/AIDS, depression, violence, drug and alcohol abuse, willful injuries, malnutrition, overweight, as well as tobacco use [4]. These problems are becoming increasingly recognized as serious global public health issues and have all been linked to an increase in maternal mortality among pregnant adolescents and an increased rate of suicide among adolescents' males. Adolescents account for 1.2 billion people globally [5], in Ghana Adolescents represent 22.4% of the total population [6]. Other studies have described adolescent sexual and reproductive health (ASRH) as the adolescents' emotional and physical well-being and encompass their ability to avoid unwanted pregnancy, unsafe abortion, STIs (including HIV/AIDS), and all forms of sexual exploitation and coercion [4]. In Ghana, the sexual and reproductive health (SRH) status of adolescents, both unmarried and married, continues to be a source of concern. Many adolescents are not given enough opportunity to better their overall health as they grow up [7,8].

They face enormous challenges as they begin to make informed life decisions. For example, a significant number of adolescents experience distress and risky sexual behaviours, and they do not receive prompt or appropriate treatment for sexual health issues [5]. This has the tendency to result in high proportions of child marriages, teenage pregnancy, domestic abuse, increased sexual violence, and lower educational attainment among teens. In countries like Ghana, where the burden of SRH concerns is significantly under-reported, the SRH-related KAP and associated influencing factors is particularly essential. Other studies have found that adolescents lack basic knowledge about their bodies, sexuality, and contraception. Discussing SRH is still frowned upon in some parts of Ghana, particularly in the Northern Region [1]. Adolescents have many myths and misconceptions about their sexuality, which causes feelings of shame in the practice of SRH. The gatekeepers of ASRH are parents, teachers, healthcare professionals, and community leaders, as they are the primary sources of SRH knowledge and services for adolescents [5]. Another study however mentioned that parents do not feel comfortable discussing SRH issues with their adolescent children, and schools provide little SRH information [9]. According to other related studies, the Ghanaian education system makes a small effect on presenting SRH knowledge to adolescents, which gives rise to so many other misconceptions and participation in unsafe or risky sexual practices among

adolescents [8,9]. Thus, sexually transmitted diseases (STDs), unwanted pregnancies, substance abuse, and unsafe abortions are major issues among adolescents in Ghana. Adequate reproductive health education is critical. However, there is still debate about who should educate adolescents about sexual issues (e.g., teachers, parents, etc.) and to what extent. Adolescent sexual decisions and behaviours can have long-term consequences, and they may suffer negative consequences if they are misinformed [10]. Furthermore, Ghana lacks nationally representative data on the level of SRH knowledge among adolescent populations. Other studies observed that the effect of education reform on adolescent fertility and early marriage diminishes with age and becomes statistically insignificant after age 19 [8]. There is some evidence that education influences adolescent fertility and early marriage as a result of knowledge acquisition, which adds to the evidence of adolescents' lack of knowledge about SRH issues [8]. A lack of knowledge as a result of inaccurate information is frequently associated with negative attitudes and practices of SRH values. Despite these trends, little is known about the reproductive health needs of adolescents in Ghana, and there was no evidence on the level of SRH-related KAP of adolescent in Ghana. It is hoped that the findings of this study will help to improve the KAP of SRH among adolescents in Tamale Metropolis, Ghana and globally. Thus, we assessed the SRH-related KAP and associated influencing factors among adolescents in the Tamale Metropolis, Ghana.

2. MATERIALS AND METHODS

The study was a community based descriptive cross-sectional survey conducted in the Tamale Metropolitan Assembly in the Northern Region of Ghana. The metropolis is located in the central part of the region with a projected landmass of 646.90180sqkm. The Assembly has a total population of 233,252. It has a youthful population, about 36.4% of the inhabitants are within the ages of 15 years [11].

The study participants were adolescents in the Tamale Metropolis. The study's definition for adolescent was adopted from the WHO's definition for adolescent; "children between the ages of 10-19 years."

The study included only in-school adolescents in both private and public primary and senior high schools within the Tamale Metropolis. The study did not include out-of school adolescents in the Tamale Metropolis.

The sample size was determined using the Raosoft sample size calculator[12]. Based on the significance level of 95%, a margin of error of 5%, response distribution of 50% and an assumption of 20,000 for an unknown adolescent population in the study area resulting in a sample size of 377. A non-response rate of 5% was used to arrive at a minimum sample size of 400.

The study used a random sampling procedure. Tamale Metropolitan Assembly traditionally is divided into four sub-districts that is; Bilpela, Nyohini, Vitting and Tamale central sub-metros. The lottery sampling method was used to select three areas within each sub-district. This gave us twelve areas/communities to be included in the study.

In each community, selecting a house (starting point) was done using the Day's code (the addition of the digits of today's date). After identifying the starting point, we used the Kish Grid to sample households and respondents. The researchers assigned alphabets(A-K) to compounds/houses and numbers (1-20) to households within each compound in a clockwise direction. The alphabet and the last number assigned to the last household within each compound are traded on the kish grid to identify the household to select the respondent.

To select a study participant in a household, all the eligible participants within the ages of 10-19 years were numbered in descending order (1-8), the last person on the list was traced to the compound alphabet and the number assigned to their interception cell was used to select the respondent with that number.

After a successful interview, the next house was identified and assigned an alphabet 'B' in that order using a sampling gap of 1 to 2. Sampling the compound, household and respondent using the kish grid continued until the entire area was covered.

A structured questionnaire was used to collect study participant's information on socio-demographic characteristics, Knowledge, Attitudes and Practices of SRH among adolescent in the Tamale Metropolitan Assembly of the Northern region of Ghana from March, 2021 to April 2021. The questionnaire was designed after a critical review of similar studies

[13,14]. Preparation for data collection included the validation of the instrument by two senior research officers at the Department of Population and Reproductive Health at the University for Development Studies, training of field officers and pretesting of the questionnaire.

To process and analysis the data, raw data was initially extracted from online software (KobotoolBox) into Microsoft Excel (Version 2019) and analyzed using the SPSS version 24. Analyses were carried out quantitatively via descriptive and inferential statistics. The outcomes were presented in frequencies, percentages and tables. The main inferential statistics performed included binary logistic regression.

To calculate the overall knowledge of SRH, nine (9) specific questions were scored. A response consistent with literature obtained a mark and those who answered I do not know and wrong response according to literature obtained no mark. A cut off value of 50% was set, where those who obtained 50% and more were said to have sufficient knowledge on SRH and less than 50% had insufficient knowledge on SRH.

Similarly, 13 specific questions under attitudes were scored. Using 50% as a cut-off point, 50% and above was said to exhibit a favourable attitude and less than 50% were said to have an unfavourable attitude towards SRH rights issues.

In the practice of SRH, eight (8) questions were scored and a cut point of 50% was set. Those who obtained 50% and above, were said to have a good practice and less than 50% were said to have poor practices of SRH.

Thereafter, binary regression was used to identify the factors influencing the Knowledge, attitude and practice of SRH. Chi-square(X^2) analysis was used for comparison between independent and dependent variables and a p-value < 0.05 was tagged as being statistically significant.

The study was conducted in line with the 1964 Helsinki declaration. Permission to conduct the study was obtained from the University for Development Studies School of Public Health Research Unit. Written informed permission was obtained from the participants. For participant less than 18 years, written and verbal assents were obtained from their parents or guardians before they were enrolled onto the study.

Participation was purely voluntary and each participant was at liberty to leave the study at any point in time. All interviews were conducted privately and confidentiality of participants' data was assured by the use of de-identifiers in the data analysis and presentation.

To ensure participants and public engagement in the study, focal persons deemed experts, including community health officers and two heads of adolescent-friendly corners in the Tamale metropolis were engaged on the design of the study protocols. During this phase, important themes on knowledge, attitudes and practices was discussed thoroughly which eventually informed the development of the data collection tool. Additionally, the researchers engaged two senior research officers at the Department of Population and Reproductive Health at the University for Development Studies to appraise the data collection tool. Similarly, the study included participants with similar characteristics to that of our study participants from the Sagnarigu Municipal (Northern Region) in the piloting phase of the study. This provided important feedback that were used to make modifications where necessary to the study data collection tool.

The study outcome would be duly disseminated among key stakeholders, including the Metropolitan Health Directorate (Ghana Health Service) and coordinators of the School Health Project in the Tamale Metropolis for targeted interventions.

3. RESULTS

3.1 Socio Demographics Characteristics of Study Participants

Table 1 as shown below depicts the socio-demographic characteristics of the 617 study participants. The study was carried out in four sub-metros of the Tamale metropolis: Bilpila, Nyohini, Vittin, and Tamale Central sub-metro. Among the ages, the majority (69.00%) were within the ages of 16 to 19 years with the mean age was 16.5 ± 1.6. The minimum and maximum ages were 10 and 19 years respectively. Most study participants (68.50%) were attending public schools with over 85.00% being in at least Junior High School (JHS). The majority of the adolescent 66.50%, 61.40%, and 64.30% were Muslims, lived with both parents, and had their household head being self-employed respectively.

Table 1. Socio-demographic characteristics

Variables	Categories	Frequency(N=617)	Percentages (%)
Sub-metro			
	Bilpila Sub-metro	150	24.30%
	Nyohini Sub-metro	150	24.30%
	Tamale central sub-metro	161	26.10%
	Vittin sub-metro	156	25.30%
Category of school			
	Private	195	31.60%
	Public	422	68.50%
Gender			
	Females	341	55.30%
	Males	276	44.70%
Age categories			
	10-15 years	191	31.00%
	16- 19 years	426	69.00%
Religion	Christianity	207	33.50%
	Islam	410	66.50%
Educational status			
	Primary School	85	13.80%
	Junior High School	314	50.90%
	Senior High school	218	35.30%
Person living with			
	Both parents	379	61.40%
	Relatives	144	23.30%
	Single parent	94	15.20%
Occupation of the household head			
	Government Job	94	15.20%
	Private	69	11.20%
	Retired/unemployed	57	9.20%
	Self-employment	397	64.30%

3.2 Knowledge of Adolescent on Sexual and Reproductive Health

The current study revealed that the majority (84.60%) of the study participants have heard about SRH. Majority (29.00%) had information about SRH via hospital, teachers (27.90%), and internet (8.00%). About 24.60% of study participants see sex as a biological function and 39.9% discussed sexual issues with their parents. Over three-fourth (3/4) of the study participants have heard about family planning and half knew about condoms with most (38.60%) of the study participants obtained information on contraceptives from the hospital. The majority (69.20%) of the study participants believed STIs were of great concern to them and (80.40%) knew of some STIs. On ways to prevent STIs, majority (65.50%) mentioned abstinence, usage of contraceptives (17.00%), avoiding contact with infected persons (12.20%), and staying with one partner (5.30%). Only 9.10% knew how to use contraceptives, with 83.50% indicating knowledge on the causes of

unwanted pregnancies. About 4.20% of the study participants indicated awareness about adolescent-friendly corners, with about half of them indicating that they had this facility in their community. The study showed that most study participants (67.60%) have insufficient knowledge of SRH as shown Table 2.

3.2.1 Cross tabulation of knowledge and sociodemographic characteristics

From the results of the chi-square analysis, the category of school, gender, religion and education with statistically significant with the overall knowledge score of study participants at *p*=0.070, *p*=0.003, *p*=0.010 and *p*=0.008 respectively as shown in Table 3.

3.2.2 Factors affecting Knowledge of Sexual and Reproductive Health

In this study, it was revealed that females were 1.6 times more likely to have sufficient knowledge on SRH as compared to males [AOR-

1.6; 95% CI (1.13-2.30), P=0.009]. Also, study participants who practised the Islamic faith were 1.8 times more likely to have sufficient knowledge of SRH as compare to their colleagues who were Christians [AOR;1.8; 95% CI (1.21-2.62), P=0.003]. Study participants who were in JHS and below were 59% less likely to have sufficient knowledge on SRH as compare to those who were in SHS [AOR-0.59, 95%CI (0.4-0.86), P=0.006] as shown Table 4.

Table 2. Knowledge of adolescents on sexual and reproductive health

Variables Categories	Frequency	Percentages (%)
Who do you consider yourself to be?		
A child	34	5.50%
Adolescent	516	83.60%
Young adult	67	10.90%
Have you ever heard of SRH?		
Yes	95	15.40%
No	522	84.60%
Source of information on SRH		
School	474	90.80%
Media	17	3.30%
Parents	7	1.30%
Peers	24	4.60%
What does sex mean to you?		
A biological function	152	24.60%
A fun activity	63	10.20%
A right	105	17.00%
An obligation	94	15.20%
Don't know	82	13.30%
Irrelevant	121	19.60%
Who would you discuss sexual issues with?		
Friends	57	9.20%
Siblings	207	33.50%
Teachers	25	4.10%
Parents	246	39.90%
Don't Know	82	13.30%
Have you heard of family planning/contraceptives before?		
Yes	464	75.20%
No	153	24.80%
Mention a contraceptive you know?		
Condoms	232	50.00%
Implants	148	31.90%
Injectables	6	1.30%
IUD	65	10.50%
Pills	13	2.80%
Source of information on contraceptives?		
Hospital	179	29.00%
Media	34	5.50%
Parents	2	0.30%
Peers	28	4.50%
Teachers	172	27.90%
Internet	49	8.00%
None	153	24.80%
Is STIs a matter of concern to you?		
Yes	427	69.20%
No	190	30.80%
Do you know any of the STIs?		
Yes	496	80.40%
No	121	19.60%

Variables	Categories	Frequency	Percentages (%)
Mention STIs you know			
	Gonorrhoea	43	8.70%
	HIV/AIDS	159	32.10%
	Syphilis	294	59.30%
What can be done to prevent STIs?			
	Abstinence	404	65.50%
	Restrict contact with infected persons	75	12.20%
	Stay with one partner	33	5.30%
	Using contraceptives	105	17.00%
Do you know how to use contraceptives?			
	Yes	56	9.10%
	No	561	90.90%
Do you know what could lead to unwanted pregnancy?			
	Yes	515	83.50%
	No	102	16.50%
Are you aware of adolescent-friendly corners?			
	Yes	26	4.20%
	No	591	95.80%
Do you have adolescent-friendly corners in your community?			
	Yes	13	50.00%
	No	13	50.00%
Overall knowledge on Sexual and Reproductive Health			
	Sufficient Knowledge	200	32.40%
	Insufficient knowledge	417	67.60%

Note: SRH= Sexual and Reproductive Health, STIs= Sexually Transmitted Infections

Table 3. Association between knowledge and sociodemographic characteristics

		Overall Knowledge		
Variables	Categories	Good	Poor	Statistical Test
Category of Schools				X^2=3.3, p=0.070*
	Public	127(30.1%)	295(69.9%)	
	Private	73(37.4%)	122(62.6%)	
Gender				X^2=9.1, p=0.003*
	Males	72(26.1%)	204(73.9%)	
	Females	128(37.5%)	213(62.5%)	
Age				X^2=1.2, p=0.200
	16-19 years	141(33.1%)	285(66.9%)	
	10-15 years	59(30.9%)	132(69.1%)	
Religion				X^2=6.6, p=0.010*
	Christian	53(25.6%)	154(74.4%)	
	Islam	147(35.9%)	263(64.1%)	
Education				X^2=9.7, p=0.008*
	SHS	56(25.7%)	162(74.3%)	
	JHS and below	144(36.1%)	255(63.9%)	
Person living with				
	Both parent	112(29.6%)	267(70.4%)	X^2=4.5, p=0.104
	Relative/single parent	88(35.6%)	150(64.4%)	
Job of head of household				X^2=3.0, p=0.300
	Formal Job	24(25.5%)	70(74.5%)	
	Self employed	134(33.8%)	263(66.2%)	
	unemployed/retired	42(33.3%)	84(66.7%)	

*X^2; Chi-square, *; Statistically significant*

Table 4. Factors affecting knowledge of sexual and reproductive health

Variables	Categories	AOR(95%CI)	P-Value
Category	Public	Ref*	
	Private	1.3(0.88-1.86)	0.195
Gender	Males	Ref*	
	Females	1.6(1.13-2.30)	0.009
Age	16-19 years	Ref*	
	10-15 years	1.2(0.79-1.71)	0.444
Religion	Christian	Ref*	
	Islam	1.8(1.21-2.62)	0.003
Education	SHS	Ref*	
	JHS and below	0.59(0.40-0.86)	0.006
Person living with			
	Both parent	Ref*	
	Relative/single parent	1.43(1.00-2.07)	0.053
The job of head of household			
	Formal Job	Ref*	
	Self employed	0.75(0.37-1.51)	0.427
	unemployed/retired	1.15(0.76-1.72)	0.514

PseudoR2=0.0402, Prob>Chi2=0.001, LRchi2 (8) =31.26 Obs (N) =617, log likelihood= 375.06

3.2.3 Attitude towards sexual and reproductive health

From the results, majority of the study participants (85.40%) believed there is increased information on SRH issues now. However, 60.00% said it was taboo to talk about sex openly, 80.70% are of the view that sex and reproduction are associated with married people, 85.70% said their religious belief makes them feel sex is bad. About 22.00% of the study participants were of the view that sex shows one's affection for his/her partner with 22.20% of the participants perceived sex to be normal with one's partner. The majority (93.70%, 88.50%, 89.10%, and 79.30%) of the study participants believed unsafe abortion is bad, all family planning methods have negative consequences on the user's health, early childbirth is dangerous and usage of family planning methods prevents pregnancy respectively. Overall, 77.70% of the respondents demonstrated unfavorable or negative attitudes towards sexual and reproductive rights as shown in Table 5.

3.2.4 Cross tabulation of attitudes and sociodemographic characteristics

Age, and the job of household head were found to be significantly associated with attitudes of study participants at *p*<0.001 and *p*=0.038 respectively, as shown in Table 6.

3.2.5 Factors affecting the attitudes of adolescence towards sexual and reproductive health rights issues

Study participants who were in private school were 1.40 times more likely to exhibit a favourable attitude towards SRH rights issues as compared to their counterparts in public schools [AOR=1.4, 95%CI (0.89-2.12), P=0.149]. Females were 1.15 more times likely to exhibit a favourable attitude towards SRH rights issues as compared to males [AOR=1.15, 95%CI (0.78-1.71), P=0.473]. Adolescents within the ages of 10 to 15 years were 2.33 more times likely to exhibit favourable attitude towards SRH rights issues as compare to their colleagues within the ages of 16 to 19 years [AOR=2.33, 95%CI (1.45-3.77), P<0.001]. Adolescents in JHS and below were 99% less likely to exhibit a favourable attitude towards SRH rights issues as compared to their counterparts in SHS [AOR=0.99,95%CI (0.66-1.48), P=0.946] as shown in Table 7.

3.2.6 The practice of sexual and reproductive health

About 23.50% of the study participants watch pornographic videos with majority (52.40%) indicating getting the pornographic videos from the internet. Only 19.40% of the study participants were in a relationship, of which 5.00% had multiple sexual partners and 8.40% of

the study participants have had sex before. The reason for sex was; mutual consent to have sex (67.30%), forced (28.90%), and under the influence of drugs/alcohol (3.80%). Most of the study participants (84.60%) had their first sex when they at least 15 years. Merely 4.40% of the study participants have used contraceptives before out of which the majority (63.00%) used condoms. On the first time engaging in sexual activity, only 36.5% used contraceptives.

Table 5. Attitude towards sexual and reproductive health

Variables	Category	Frequency	Percentage (%)
Is there increased information on SRH issues			
	Yes	527	85.40%
	No	90	14.60%
Taboo to talk about sex openly			
	Yes	370	60.00%
	No	247	40.00%
Sex and reproduction are the business of adults			
	Yes	498	80.70%
	No	119	19.30%
Religious belief makes me feel sex is bad			
	Yes	529	85.70%
	No	88	14.30%
I am supposed to obtain information about sex on my own			
	Yes	350	56.70%
	No	258	41.80%
Is normal to have sex with your partner			
	Yes	136	22.00%
	No	481	78.00%
Sex shows how you love your partner			
	Yes	137	22.20%
	No	480	77.80%
People who purchase condoms are seen as bad			
	Yes	449	72.80%
	No	168	27.20%
Can't go to the hospital to talk about sexual issues			
	Yes	318	51.50%
	No	299	48.50%
Unsafe abortion is bad?			
	Yes	578	93.70%
	No	39	6.30%
All contraceptives harm health			
	Yes	546	88.50%
	No	71	11.50%
Early childbearing is dangerous?			
	Yes	550	89.10%
	No	67	10.90%
Contraceptive usage prevents pregnancy			
	Yes	489	79.30%
	No	128	20.70%
Over attitude toward sexual and reproductive rights issues			
	Favourable attitude	138	22.40%
	Unfavourable attitude	479	77.70%

Table 6. Association between attitudes and sociodemographic characteristics

Variables	Categories	Attitude on SRH issues		Statistical test
		Favorable	Unfavorable	
Category of schools				X^2=1.4, p=0.240
	Public	100(23.7%)	322(76.3%)	
	Private	38(19.5%)	157(80.5%)	
Gender				X^2=0.40, p=0.520
	Males	65(23.6%)	211(76.4%)	
	Females	73(21.4%)	268(78.6%)	
Age				X^2=12.2, p<0.001*
	16-19 years	112(26.3%)	314(73.7%)	
	10-15 years	26(13.6%)	165(86.4%)	
Religion				X^2=0.07, p=0.790
	Christian	45(21.7%)	162(78.3%)	
	Islam	93(22.7%)	317(77.3%)	
Education				X^2=0.2, p=0.910
	SHS	50(22.9%)	168(77.1%)	
	JHS and below	88(22.1%)	311(77.9%)	
Person living with				X^2=5.9, p=0.050
	Both parent	77(20.3%)	302(79.7%)	
	Relative/single parent	61(25.6%)	177(74.4%)	
Job of head of household				X^2=8.41, p=0.038*
	Formal Job	17(18.1%)	77(81.9%)	
	Self employed	81(20.4%)	316(79.6%)	
	unemployed/retired	40(31.7%)	86(68.3%)	

*X^2= Chi-square, *= statistically significant*

Table 7. Factors affecting the attitudes of adolescence towards sexual and reproductive health rights and issues

Variables	Categories	AOR (95%CI)	P-value
Category	Public	Ref*	
	Private	1.40(0.89-2.12)	0.149
Gender	Males	Ref*	
	Females	1.15(0.78-1.71)	0.473
Age	16-19 years	Ref*	
	10-15 years	2.33(1.45-3.77)	**P<0.001**
Religion	Christian	Ref*	
	Islam	1.05(0.69-1.60)	0.814
Education	SHS	Ref*	
	JHS and below	0.99(0.66-1.48)	0.946
Person living with			
	Both parent	Ref*	
	Relative/single parent	1.33(0.88-2.00)	0.172
The job of head of household			
	Formal Job	Ref*	
	Self-employed	1.42(0.71-2.84)	0.322
	unemployed/retired	0.91(0.58-1.43)	0.696

Pseudo R2=0.0319, Prob>chi2 =0.0074, Obs (7) =617, LR chi2=20.9, Log likelihood =-317.49

A total of 18 (2.90%) of the study participants have visited adolescent-friendly corners before, 41.7% stated that health staff attitude toward adolescent who seeks SRH services was bad. Currently, adolescent receive information on SRH issues from school (29.50%), television (26.1%), hospital (17.20%), social media (13.50%), parents (9.20%), and friends (4.50%). Most of the study participants (44.90%) would like to receive information on SRH from school, other mentioned media (20.40%), health facility (19.10%), homes (14.70%), and friend (0.80%).

Overall, the majority (67.70%) of the study participants demonstrated poor practice of SRH as shown in Table 8.

3.2.7 Cross tabulation of practices and zsociodemographic characteristics

The category of school was found to be significantly associated with practices of adolescent sexual and reproductive health at *p*=0.044 as shown in Table 9.

3.2.8 Factors affecting the practice of sexual and reproductive health

On the practice of SRH, Private schools were 73% less likely to have good practice of SRH as compare to those in public schools [AOR=0.73, 95%CI (0.5-1.07), P=0.11]. Females were 72% less likely to have good practice of SRH as compared to males [AOR=0.72, 95% CI (0.49-1.05), p=0.19]. Adolescents within the ages of 10 to 15 years were 84% less likely to have good practice of SRH as compared to those within the ages of 16 to 19 years[AOR=0.84, 95%CI(0.59-1.22), P=0.382]. Adolescents in SHS were 1.4 more likely to have good practice of SRH as compared to their counterparts in JHS and below [AOR=1.4, 95% CI (0.98-1.99), P=0.06] as shown in Table 10.

4. DISCUSSION

The WHO has continuously maintained that adolescents are a diverse group, and with varying growing needs, in the context of their advancement and social context [15]. It is equally important to know that as individuals' transition from childhood to adulthood, health-related knowledge and skills becomes essential to promote well-being [15]. Our study, therefore, assessed the knowledge, attitudes and practices towards sexual and reproductive health among adolescents with an age range of 10 and 19 years (16.5 ± 1.6). The peak age was among 16 to 19 years. Our study comprised both males and females. This is inconsistent with similar studies in Guyana and South Africa that only considered females and males separately [16,17]. Our study provides important findings from both sexes on sexual and reproductive health as described elsewhere [1,18,19]. Our study included primary and senior students in both public and private schools in the Tamale Metropolis. Some past studies on sexual and reproductive health in Ghana have often been limited to junior and senior school students [1,20,21]. This reflects a knowledge gap among students at primary schools. Research has shown that most risky health behaviours including early sexual initiation are learnt at a very younger age at which most of them may be at the junior high school level of education. Understanding the level of knowledge, attitudes and practices on sexual and reproductive health (SRH) issues among primary school students could provide valuable information that can guide both local and national discourse on adolescent sexual and reproductive health (ASRH). It was obvious that Muslims constituted the majority. Our study setting is known for its Muslim dominance [11]. This finding reflects the need to recognize the Muslim community as essential stakeholders in addressing ASRH issues in the study area as they constituted the majority. However, recognition should be given all other religious sects in the study area in the design of ASRH interventions. Parents play critical role in educating adolescents on SRH [22]. Most of our study participants lived with their parents. Targeting parents with ASRH education would significantly influence adolescent's knowledge and practices of SRH.

Table 8. Practice of Sexual and Reproductive Health

Variables	Categories	Frequency	Percentages (%)
Do you watch pornographic videos?			
	Yes	145	23.50%
	No	472	76.50%
Where do you get pornographic videos?			
	Friends	40	27.60%
	Television	29	20.00%
	Internet-Based	76	52.40%
Are you in a sexual relationship?			
	Yes	120	19.40%
	No	497	80.60%
Do you have multiple sexual partners?			
	Yes	6	5.00%
	No	114	95.80%

Variables	Categories	Frequency	Percentages (%)
Have you ever had sex?			
	Yes	52	8.40%
	No	565	91.60%
At what age did you first have sex?			
	Less than 15	8	15.40%
	15 & above	44	84.60%
Reason for your first sex?			
	Mutual consent to having sex	35	67.30%
	Pressure/forced	15	28.90%
	Alcohol/drug influence	2	3.80%
Have you ever used contraceptives before?			
	Yes	27	4.40%
	No	590	95.60%
Which contraceptives have you ever used?			
	Condoms	17	63.00%
	Emergency contraceptive	8	29.60%
	Injection	2	7.40%
Did you use a contraceptive during your first sex?			
	Yes	19	36.50%
	No	33	62.50%
Which contraceptive did you use in your sex?			
	Condom	16	84.20%
	Emergency Contraceptive	3	15.80%
Does health staff show a negative attitude towards adolescents who seek SRH services?			
	Yes	257	41.70%
	No	360	58.30%
Have you ever visited adolescent-friendly corners before?			
	Yes	18	2.90%
	No	599	97.10%
Where do you obtain information on SRH issues currently?			
	Friends	28	4.50%
	School	182	29.50%
	Hospital	106	17.20%
	Parents	57	9.20%
	Social Media	83	13.50%
	Television	161	26.10%
How would you like to receive the information on SRH?			
	Home	91	14.70%
	Friends	5	0.80%
	Health facility	118	19.10%
	School	277	44.90%
	Media	126	20.40%
Describe your overall practice of SRH			
	Good Practice	199	32.30%
	Poor Practice	418	67.70%

SRH= Sexual and Reproductive Health

The study showed that the majority of the study participants had insufficient knowledge of ASRH, consistent with conclusions made in other studies [17,23-25]. However, most indicated awareness about SRH with the commonest source of information being school. Other sources included peers, media and parents. As often said, awareness does not automatically ensure good behaviours and practices of healthy lifestyles including sexual health, it is however an essential condition to stimulate a behaviour change [26]. Developing a good school health

system becomes critical to addressing sexual and reproductive health-related issues for school children to complement the efforts of conventional health systems. Again, circulating accurate information on SRH among adolescents could have a cascading effect. As established in this study and others elsewhere [24], adolescents rely upon themselves to share information. According to Fozia et al. [19] in a related study, sexual problems are predominantly discussed among peers. This may suggest that peers hold some form of confidence among themselves to discuss issues such as sexual problems. The associated disadvantage on peers sharing information and offering possible solution among themselves may stem from misinformation and misconceptions. However, if the shared information and potential solution shared is of professional value, it may greatly influence SRH. The other sources of information on ASRH should be used to spread essential information among adolescents. The role of parents in the education of adolescents on SRH cannot be overemphasized [22,27,28]. A higher proportion of our study participants indicated that they discuss sexual issues with their parents, a

contrast to Fozia et al. [19] observation. Among the ASRH components recognized by our study participants comprised family planning, condoms, adolescent-friendly corners, sexually transmitted infections (STIs), and its prevention including abstinence, usage of contraceptives avoiding contact with infected persons and staying with one partner. These components have also been recognized in other previous studies [16-18, 24,23]. Just a few of our study participants indicated knowledge on the use of available contraceptives. This does not present a good outlook, considering the public health risks among the adolescent stage of life, including STIs, teenage pregnancy and adverse pregnancy outcomes [29,30]. Knowledge score was found to be significant between category of school (p=0.070), gender (p=0.003), religion (p=0.010) and education (p=0.008). Among the significant factors that affect ASRH in our study included being female, Islamic and being in JHS. Our study showed that females were 1.6 times more likely to have sufficient knowledge on SRH as compared to males [AOR-1.6; 95% CI (1.13-2.30), P=0.009]. However, Fozia et al. [19] reported a varying result that showed that males

Table 9. Association between practices and sociodemographic characteristics

Variables	Categories	Practices of SRH		Statistical Test
		Good	Poor	
Category of schools	Public	147(34.8%)	275(65.2%)	X^2=4.07, p=0.044*
	Private	52(26.7%)	143(73.3%)	
Gender	Males	92(33.3%)	184(66.7%)	X^2=0.3, p=0.510
	Females	107(31.4%)	234(68.6%)	
Age	16-19 years	132(31.0%)	294(69.0%)	X^2=1.01, p=0.320
	10-15 years	67(35.1%)	124(64.9%)	
Religion	Christian	74(35.7%)	133(64.3%)	X^2=1.74, p=0.190
	Islam	125(30.5%)	285(69.5%)	
Education	SHS	80(36.7%)	138(63.3%)	X^2=3.2, p=0.200
	JHS and below	119(29.8%)	280(70.2%)	

*X^2= Chi-square, *= Statistically significant*

Table 10. Factors affecting the practice of Sexual and Reproductive Health

Variables	Categories	AOR(95% CI)	P-value
Category	Public	Ref*	
	Private	0.73(0.50-1.07)	0.11
Gender	Males	Ref*	
	Females	0.72(0.49-1.05)	0.19
Age	16-19 years	Ref*	
	10-15 years	0.84(0.59-1.22)	0.382
Religion	Christian	Ref*	
	Islam	0.76(0.53-1.09)	0.14
Education	JHS and below	Ref*	
	SHS	1.4(0.98-1.99)	0.068

PseudoR2=0.0124, Prob>Chi2=0.048, Obs (5) =617, LR chi (4) =9.61, Log likelihood=-383.14

had higher odds to discuss sexual issues than their female counterparts (O.R = 1.6, 95% CI; 1.2-2.1). An indication that males would have more information on SRH once discussed. Adolescents who practiced the Islamic faith were 1.8 times more likely to have sufficient knowledge of SRH as compared to their colleagues who were Christians [AOR;1.8; 95% CI (1.21-2.62), P=0.003]. Benson et al. [31] also reported less use of contraceptives among persons who factor in religious beliefs before uptake (OR = 0.4, 095% CI: 0.2–0.9). This highlights the importance of religion in health promotion as explained elsewhere [32]. Our study equally noted that study participants who were in junior high school and below were less likely to have sufficient knowledge on SRH as compared to those who were in senior high school (SHS) [AOR-0.59, 95%CI (0.4-0.86), P=0.006]. This finding may reflect the knowledge gap that exists among junior high school students on SRH issues. It is therefore important to shift attention among junior high school students to address the knowledge gap on SRH. As maintained by Muhammed et al. [33], the educational level of individuals has a positive effect on the level of knowledge on SRH issues including reproductive health and family planning.

Overall, our study participants demonstrated poor attitudes towards SRH, a contrast to the report of Jaffer et al.[25] with more than half of their study participants exhibiting positive attitudes towards SRH. The observed differences can partially be assigned to the differences in the level of exposure to SRH. Though our study participants maintained that there is increased information on SRH issues now, nonetheless, it was taboo to talk about sexual issues openly. This can be construed as a hindrance to effect good behaviour change on SRH among adolescents and may reflect our societal values on sexual health among adolescents. ASRH interventions may be hampered if sex and reproductive health issues are viewed as subjects exclusively for married people. Policy-makers and public health practitioners could employ the reported attitudes on SRH to develop tailored messages to address the poor views on SRH. Religion plays a critical role in the use and acceptability of SRH measures including contraceptive use [34]. Unsurprisingly, the majority of our study participants stated that their religious beliefs make them feel uncomfortable discussing sexual issues. Dzordzormenyoh [32] explained that most Ghanaians tend to infer most

of their life circumstances to religious viewpoints. Doctor et al.[35] noted that religion greatly influences contraception use among women. This reemphasizes the need to consider keenly, religious groups in designing public health interventions. Attitudes of study participants was significantly associated with age (p<0.001), and the job of household head (p=0.038). Similarly, our study revealed higher odds among adolescents in private schools compared to their counterparts in public schools [AOR=1.4, 95%CI (0.89-2.12), P=0.149]. Is it the case that private schools give pay much attention to SRH issues among students? This question goes beyond the scope of this study and therefore recommends for further study. Similarly, females were 1.15 more times likely to exhibit a favorable attitude towards SRH rights issues as compared to males [AOR=1.15, 95%CI (0.78-1.71), P=0.473]. Marijanatu et al. [36] higher odds of contraceptive use among women with secondary education in a related study. There appeared to be higher odds of good attitudes among persons in 10 to 15 years compared to the 16 to 19 years group [AOR=2.33, 95%CI (1.45-3.77), P<0.001]. Likewise, Oppong et al. [37] noted that students with secondary education had higher odds of contraceptive compared with those with primary education (OR 2.43, 95% CI 1.31 to 4.49, p=0.017). This is slightly consistent with our observation of junior high school students less likely to exhibit a favourable attitude towards SRH issues as compared to their counterparts in SHS [AOR=0.99,95%CI (0.66-1.48), P=0.946].

The majority of our study participants demonstrated poor practice of SRH. Among the commonest poor practices included watching pornographic videos via the internet, intimate relationship, multiple sexual partners and engagement in unprotected sex. There exist similar and varying practices of SRH among studies depending on the objectives and data used [13,38,39]. Findings from these studies should be harnessed to address holistically the poor practices of SRH. As illustrated in Kyilleh et al. [24] study, unprotected sex and unsafe abortion were common SRH practices among the target group. Similarly, Govender et al. [5] reported repeated pregnancies among adolescents, suggesting that even initial pregnancy among adolescents does not necessitate the use of contraceptives. Among the positive aspects of SRH practices among our study participants include visiting adolescent-friendly corners (AFC). AFCs are primarily

purposed to enhance knowledge, attitudes and practices on SRH among adolescents to reduce STIs, teenage pregnancies and school dropout among young girls [40]. Adolescents should therefore be encouraged to employ the services of AFCs. Practices of SRH was significantly associated with the category of schools (p=0.044). Similarly, adolescents within the ages of 10 to 15 years were 84% less likely to have good practice of SRH as compare to those within the ages of 16 to 19 years [AOR=0.84, 95% CI (0.59-1.22), P=0.382]. Ahinkorah [41] also acknowledged that persons aged 15–19 had lower odds of using SRH services such as contraceptives [AOR = 0.86, CI = 0.83–0.90]. These findings may generally explain that SRH practices among adolescents may be poor. Likewise, adolescents in senior high school are more likely to have good practice of SRH as compared to their counterparts in junior high school and below [AOR=1.4, 95% CI (0.98-1.99), P=0.06]. This may affirm Govender et al.[5] finding of persons with secondary education likely to have repeated pregnancies (P< 0.0001). Knowledge, attitudes and practices are important conditions to facilitate individuals' health-seeking behaviours and utilization of available healthcare services.

5. STUDY LIMITATION

Our study only focused on in-school adolescents in the Tamale metropolis, missing out of school adolescents. The views expressed may generally reflect the views of in-school adolescents. The study only relied on the views expressed by participants and did not cross-check with any health facility to ascertain the accuracy of their reports.

6. CONCLUSION

Sexual and reproductive health knowledge, attitudes and practices were poor among adolescents in the Tamale Metropolis. The study highlighted important factors including age, sex religion, and educational level to affect knowledge, attitudes and practices towards SRH. Further research is needed to better appreciate the knowledge gap of SRH among students in primary schools. Stakeholders, including the Ghana Health Service, School Health Project and parents should use the findings in this study as the baseline to conceptualize public health education and promotion interventions among adolescents in the Metropolis and elsewhere to improve SRH.

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