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Knowledge and Perspective regarding Adolescent Sexual and Reproductive Health Among Adolescents in Selected Schools of Birendranagar Mucinipality of Surkhet, Karnali Province

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Abstract

Introduction: Adolescence is the period of transition and opportunity in which physical, psychological, and social changes occur. Adolescents have various sexual and reproductive health problems like teenage pregnancy, abortions, sexually transmitted infections, etc. This study was designed to investigate the adolescence's knowledge and perspective towards sexual and reproductive health in Birendranagar Municipality of Surkhet, Nepal.

Methods: A descriptive cross-sectional study was designed to investigate the adolescence's knowledge and perspective towards sexual and reproductive health in Birendranagar Municipality of Surkhet, Nepal. Structured questionnaires were developed in close-ended form and administered to a selected sample population. The questionnaire contained questions in five domains: social-demographic data, knowledge regarding adolescents' sexual life, knowledge on reproductive health and safe sexual behavior, practices of sexual behaviors, and other contextual factors. In this study, a total of 328 respondent's questionnaires were issued, and 312 were valid. The response rate was 95%.

Results: There were a total of 312 participants, 174 boys, 137 girls, and 1 third gender involved in the study. Around 80% of adolescents were from secondary level education, and only 20% were from basic level education. Nearly half of the adolescents had inadequate knowledge of adolescents's sexual and reproductive health. Sexual abuse, unwanted pregnancy, early marriage, and STIs were the common reproductive health problems faced by adolescents.

Conclusion: So, based on the above findings, government of Nepal should make different plans and policies to solve the adolescent's sexual and reproductive health problems.

Keywords: Knowledge, Adolescence, Sexual, Reproductive Health, Birendranagar

1. Introduction

The -World Health Organization (WHO) defined adolescence as the period between 10 to 19 years of age. Physical, psychological, and social changes occur during the period of adolescence. Adolescence gains more progressive patterns of thinking and reasoning, makes new social relationships and attachments, and develops an increasing sense of responsibility and independence throughout the period of adolescence. (1) Currently, the total number of adolescents in the world is 1.3 billion, which encompasses 16 percent of the world's population. (2) It is estimated that 90% of adolescents live in low and middle-income countries in 2019.(3) Economically poorest adolescent girls had a three-times higher chance of early marriage and associating other problems like high rates of morbidity, mortality, undernutrition etc. (4)

Adolescents have various sexual and reproductive health problems. There are five major categories of such types of health problems: pregnancy and delivery related, anaemia and haemorrhage-related, chronic complications, abortion related, STDs, and others. Nearly half of the adolescent girls had at least 1 type of sexual and reproductive health problem in the last five years, which indicated very serious health concern among rural adolescence girls. (5) In 2016, there were 21 million pregnancies among adolescent girls aged 15-19 years in developing

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countries. Almost half (49%) of them were unintended pregnancies. Data shows that, 12 million adolescents girls aged 15-19 years gave birth. The unmet need for modern contraception with the risk of unintended pregnancy among adolescent girls was estimated at 23 million. 21% of unintended pregnancies in Asia, 49% in Latin America and Caribbean and 46% in Africa end in unsafe abortions. (6)

The NDHS report 2022 shows teenage pregnancy in Nepal was 14%. The percentage of teenage pregnancy is highest in Karnali Province (21%), and lowest in Bagmati Province (8%). More than half (57%) of currently married women are using a method of contraception. The unmet need for family planning services in Nepal is 21 percent. So, the total demand for family planning services among currently married women is 78%. The report also demonstrates that the women aged 15-19 years with no education (33%) are more likely to start childbearing earlier than those with at least some secondary education (8%). (7) A recent study done among the Chepang community in Nepal revealed a very high percent of adolescent pregnancy (71.4%). The same study also showed that the large percentage of participants (72.7%) were married before the age of 18 years. (8) Low birth weight babies, premature delivery, perineal and cervical tears are the common complications associated with teenage pregnancy. (9) Efforts of every individual, family, school, friends, and community may help with delayed marriage, reduced fertility, improved child survival, and reduction in health care costs. School education is a strong weapon to reduce the probability of marriage and birth at an early age, as well as to promote sexual and reproductive health status of adolescents. Education has both intrinsic and instrumental values. Benefits can be taken by parents, peers, family, and even society. (5)

Adolescence is not only the period of transition but also the period of opportunity. If they get a favourable environment, they gain opportunity for a healthy society. So, we must have collective responsibility in ensuring their health. Hence, adolescents' sexual and reproductive health must be supported. This study aimed to investigate the adolescence's knowledge and prospective towards sexual and reproductive health and to analyse the influential factors of knowledge level of sexual and reproductive health.

2. Methods and Materials

Study design and setting

A descriptive cross-sectional study was designed to investigate the adolescence's knowledge and perspective towards sexual and reproductive health in Birendranagar Municipality of Surkhet, Nepal. Formal and informal permission from the authority of the study area was obtained. Purpose and objective were informed to each respondent. Verbal and written informed consent was taken from each respondent. Privacy, confidentiality, and anonymity of all respondents were maintained. Close-ended, self-developed structured questionnaires were used to collect data. In this study, a total of 328 respondent's questionnaires were issued, and

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312 were valid. The response rate was 95%. The study data were collected from **15th May to 26th June 2024.**

Participants, sampling and sample size

Adolescence aged 10 to 19 years who were willing to participate in the study and belonged to Birendranagar Municipality were eligible to participate in the study. A multi-stage random sampling method was applied to select the required number of sample sizes.

The sample size was 5-10 times of the independent variables. This rule for sample size calculation was already used in previous studies.(10, 11) There were less than 26 independent variables in the study. So, considering the 20% non-response rate, the final sample size was 312. Birendranagar Municipality of Surkhet district was selected purposively for the study. There are total 90 public and private high-schools in the Birendranagar Municipality. Firstly, we applied simple random sampling to select the three schools from 90 public and private schools. Secondly, we gathered the name lists and serial number or student's identity number from the main attendance register. There were a total of 1596 students in each section of grade 8, 9 and 10. After that, the total number of sample population was divided by the required number of sample sizes to obtain the K^{th} number, where K was the sampling interval. Finally, we selected the required number of sample size from each section, each grade and each school starting between 1 and K. The value of K was obtained 5. The sampling procedure was as follows:

Determination of sample participants

Table 1 determination of sample participants

S.N.	Name of School	Grade/Class	No. of Students	Percent	Sampled Participants
1	Jana Namuna Secondary School	8	285	17.86	49
		9	377	23.62	76
		10	358	22.43	72
2	Bhairab Secondary School	8	106	6.64	19
		9	156	9.77	32
		10	141	8.84	29
3	SOS Herman Gmeiner	8	46	2.88	9
		9	85	5.33	17
		10	42	2.63	9
	Total		1596	100	312

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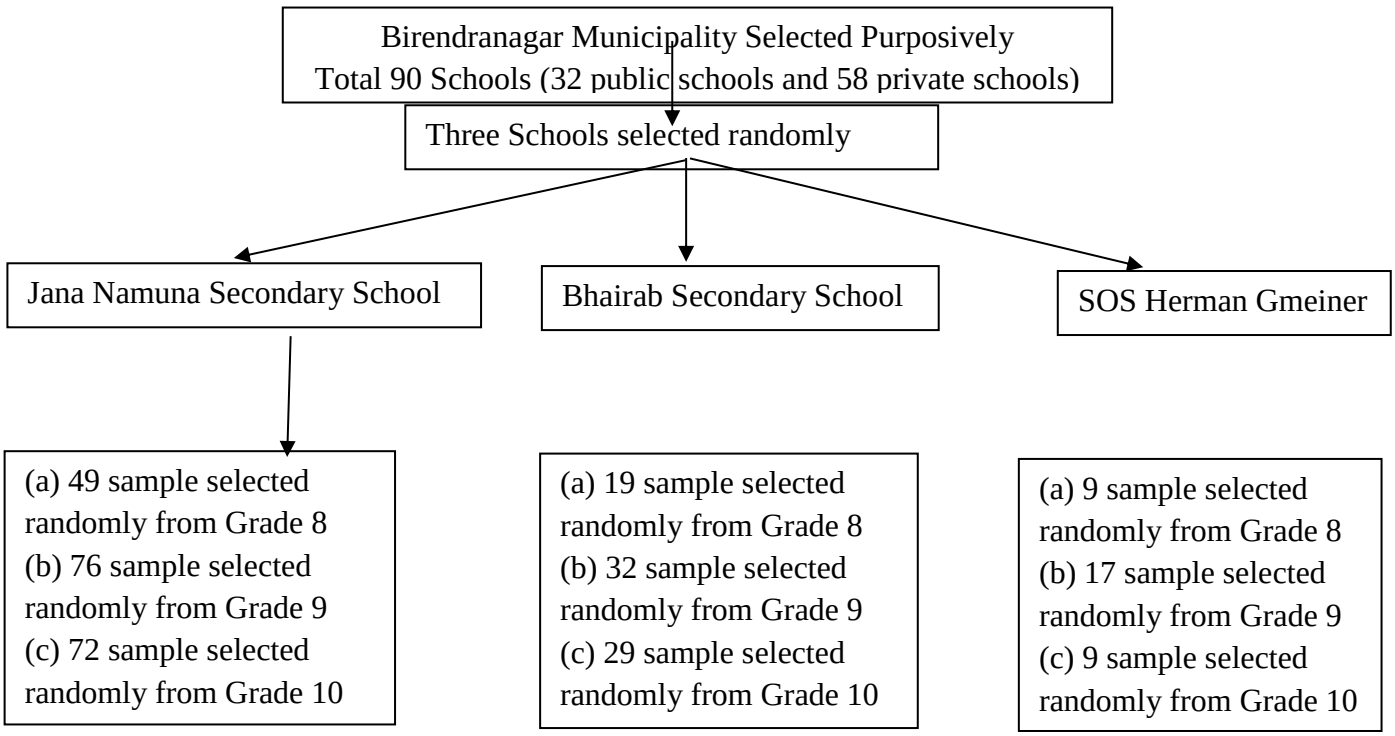

Figure: Sampling Flow

Instruments

Questionnaire about knowledge of sexual and reproductive health

Structured questionnaires were developed in close-ended form and administered to a selected sample population. The questionnaire contained questions in five domains: social-demographic data, knowledge regarding adolescents' sexual life, knowledge on reproductive health and safe sexual behavior, practices of sexual behaviors, and other contextual factors. Based on 13 questions about knowledge of sexual and reproductive health, scores were counted to evaluate whether adolescents get adequate knowledge. 1 point was given to the choice of "yes" in five single choice questions. As for multiple choice questions, each point was given to each choice. The highest score was 42, and an adolescent was regarded as having adequate knowledge with a score equal to or above 21, otherwise they were considered as not gaining adequate knowledge. The pre-test was done in 10% of the sample size.

Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS)

Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) contained five questions assessing satisfaction with life in five different domains. It was a seven-point scale with response ranges as follows: 1 =terrible, 2 =unhappy, 3=mostly dissatisfied, 4=mixed feeling of satisfied and dissatisfied, 5=mostly satisfied, 6=pleased and 7=delighted. Mean total scores for the BMSLSS were calculated by the sum score of the five items dividing the number of items. The Cronbach's α of BMSLSS in former studies ranged was from 0.75 to 0.89. (12, 13)

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Ethical Approval

Initial ethical approval was obtained from NHRC having research proposal ID 283-2023. Before data collection, written approval from selected schools was taken. The purposes of the study, voluntary participation, right to withdraw, and information on the study were explained to each respondents. Finally, verbal and written consent taken from each respondent.

Data Analysis

Descriptive statistics of the frequencies and means and standard deviation of the demographic variables of the study were first carried out. Chi-Square test was used to compare the difference between adolescents with adequate and inadequate knowledge in univariate analysis. Logistic regression analysis was used to select independent influential factors of the adolescent's sexual and reproductive health knowledge level.

Quality control of Data

a. Reliability

For the internal consistency and reliability of the instrument, the self-prepared questionnaires were tested on 10% adolescents on another population of the same characteristic. The team of researchers themselves was involved in the questionnaire administration. To prevent impurity in information, respondents were kept separately. Those pretested respondents were not included in actual research. The questionnaire was pretested for completeness and appropriateness to the knowledge and perspective regarding ASRH of adolescents who were not selected for the study. Based on the results of the pre-testing, the questionnaire was modified according to the need and objective of the study.

b. Validity

To maintain the content validity of the scale instrument, it was administered by studying and reviewing related literature. Similarly, research advisor/ mentor consultation was done. For the tool validation, six subject experts-professor/ gynaecologist, expert teachers, statisticians and colleagues/peers were consulted and necessary correction and modification was done as their advice.

After finishing the data collection, all data were rechecked, edited, and coded on the same day of data collection. The refined data was entered in CSPro 7.1 version. The entered data were transferred in IBM-SPSS version 20 for further analysis. Analysis was done by a minimum 2 persons to control the potential risk.

3. Results

Socio-demographic characteristics of the participants

A total of 312 participants, 174 boys (55.8%), 137 girls (43.9%), and 1 third gender (0.3%) were involved in the study. The mean age of the participants was 14.30±1.08 years. 97.1% of adolescents were unmarried. Around 80% of adolescents were from secondary level education, and only 20% were from basic level education. Table 2 shows the socio-demographic characteristics of the participants.

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Table 2 socio-demographic characteristic of adolescents

Characteristics	Frequency (n=312)	Percentage
Age group (in years)		
10-14 years	165	52.9
15-17 years	146	46.8
18-19 years	1	.3
Mean age ± SD	14.30±1.08 years	
Sex		
Male	174	55.8
Female	137	43.9
Third Gender	1	0.3
Ethnicity		
Dalit	21	6.7
Disadvantaged janajatis	29	9.3
Disadvantaged non dalit	22	7.1
Religious minorities	3	0.9
Relatively advantaged janajatis	12	3.8
Upper caste group	225	72.2
Family Type		
Nuclear	180	57.7
Joint	112	35.9
Extended	20	6.4
Educational level		
Basic level	62	19.9
Secondary Level	50	80.1
Grade of Study		
Eight	62	19.9
Nine	131	42.0
Ten	119	38.1
Religion		
Hindu	272	87.2
Christian	22	7.1
Buddhist	13	4.2
Muslim	2	0.6
Others	3	1.0
Marital Status		
Married	9	2.9
Unmarried	303	97.1

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Economic characteristics of the participants

Regarding father's occupational status, around half (49.7%) of the respondent's fathers were engaged in business, followed by jobs (18.9%), other occupations (16.7%), agriculture (10.9%), and labour only 3.8%, while 16.7% were from other occupations. In the mother's occupation, the majority were involved in business (34%). The mothers of respondents engaged in agriculture were 20%, job 14%, and least 2.6% were labour whereas 29.5% were from other professions, as shown in Table 3.

Table 3 Economic characteristic of participants.

Characteristics	Frequency (n=312)	Percentage
Fathers Occupation		
Agriculture	34	10.9
Business	155	49.7
Job	59	18.9
Labor	12	3.8
Others	52	16.7
Mothers Occupation		
Agriculture	62	19.9
Business	107	34.3
Job	43	13.8
Labor	8	2.6
Others	92	29.5
Family Monthly Income (NPR)		
0-20000	96	30.8
20000-30000	122	39.1
30000-40000	40	12.8
40000 +	54	17.3
Average Income	NPR 34385.33 ±32151.5	

Distance from health facility

Among all respondents, the proportion of those having less or equal to 30 minutes walking distance from home to health facility was almost two-thirds (68.9%), and those having more than 30 minutes walking distance were of one third (31.1%).

Table 4 Respondent's home to health facility distance

Distance from Health Facility	Frequency (n=312)	Percentage (%)
≤30 minutes	215	68.9
> 30 minutes	97	31.1

Practice of sexual behaviors and health resources that adolescents could get

93.9% of respondents didn't experience any reproductive problems. Among those who experienced the problems, 26.3% experienced sexual abuse, and 21.1% experienced unwanted

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pregnancy. Among all participants, only 53% could discuss their own sexual and reproductive life with their parents, although 86.2% had been exposed to sex education in school. Table 5 revealed the sexual behaviours of the respondents and the health service site where the respondents consumed the services.

Table 5 Respondents' Practice of sexual behaviors and health resources that adolescents could get

Characteristics	Frequency	Percentage
Experienced any reproductive problems		
Yes	19	6.1
No	293	93.9
Types of reproductive problems experienced		
Unwanted pregnancy	4	21.1
STIs	2	10.5
Subsequent risk of infertility	1	5.3
Early marriage/early motherhood	3	15.8
Sexual abuse	5	26.3
PID	2	10.5
Others	2	10.5
Help in decision making regarding reproductive right		
Parents	250	81.2
Self	196	63.6
Others	73	23.7
Receives Health Service from		
Home	197	63.1
Neighbor's home	49	15.7
Government Hospital	221	70.8
Private hospital	204	65.4
Traditional healer	32	10.3
Others	26	8.3
Ever been sexually abused or coerced		
Yes	22	7.1
No	290	92.9
Can discuss own sexual and reproductive life with parents		
Yes	165	52.9
No	147	47.1
Exposure to sex education in school		
Yes	269	86.2
No	43	13.8
Accessibility of FP services		

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Yes	255	81.7
No	57	18.3
Accessibility to type of FP services		
Condom	209	94.6
Oral contraceptive Pills	152	68.8
Dipoprovera	100	45.2
Implant (jedella)	95	43.0
Intra uterine contraceptive device (IUCD)	102	46.2
Others	18	8.1
Prohibition to go Health Institution due to religious faith		
Yes	50	16.0
No	262	84.0
Expectation from Government to promote ASRH		
Public awareness	287	92.0
Accessibility and availability of family planning methods	253	81.1
Advertisement of informative notice from the media	258	82.7
Inclusive school health program	249	79.8
Others	45	14.4

Knowledge regarding adolescents' sexual life

The greatest (92%) number of the respondents were aware on adolescence period. The most common perceived danger signs of unsafe sexual behaviour among respondents was HIV (95.83%). Multiple sex partner (86.22%) and not using condom (77.24%) were the common perceived unsafe sexual behaviour. More than half (56%) of the respondents reported that they have knowledge on correct use of condom. Rest of the knowledge regarding adolescent's sexual life is displayed in table 6.

Table 6 Knowledge regarding adolescents' sexual life.

Characteristics	Frequency	Percentage (%)
Awareness of Adolescence Period		
Yes	287	92
No	25	8
Perceived Danger Signs of Unsafe Sexual Behavior		
HPV	131	41.99
Genital Herpes	58	18.59
Chlamydia	39	12.50
Gonorrhea	125	40.06
HIV	299	95.83
Syphilis	130	41.67
Trichomoniasis	38	12.18

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Others	13	4.17
Don't know	3	0.96
Perceived unsafe sexual behavior		
Multiple sex partner	269	86.22
Not using condoms	241	77.24
Exposed to STI	134	42.95
Oral sex	82	26.28
Anal sex	93	29.81
Others	24	7.69
Don't know	11	3.53
Perceived danger signs of sexual infection		
Fever	119	38.14
Foul smell	102	32.69
Lower abdomen pain	137	43.91
Itching/pruritis	68	21.79
Dysuria	135	43.27
Burning	80	25.64
Warts/sores	111	35.58
Others	13	4.17
Don't know	37	11.86
Respondents view towards possibility that danger condition can lead to death		
Yes	303	97.1
No	9	2.7
About the correct use of condom		
Yes	175	56.1
No	137	43.9

Knowledge on reproductive health

In Table 6, 98% respondents had heard about the importance of reproductive health. Most of them (92.8%) had heard from the teachers, 70% heard from parents, and only 36% heard from friends and relatives. Similarly, more than three quarter (75.32%) of the respondents reported that the safe and healthy reproduction was the component of reproductive health. Still, nearly 5% of the respondents did not know about any components of reproductive health as shown in table 7.

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Table 7 Knowledge on reproductive health

Characteristics	Frequency	Percentage (%)
Heard about importance of RH		
Yes	306	98.1
No	6	1.9
Heard about importance of RH in adolescents from		
Parents	213	69.6
Teachers	284	92.8
Radio/ Television	198	64.7
Posters/ Written materials	111	36.3
Friends/ Relatives	171	55.9
Health workers	192	62.7
Others	15	4.9
Perceived components of RH		
Safer sexual life	213	68.27
Safe and healthy reproduction	235	75.32
Informed, Contraceptives provision	115	36.86
Equalities in RH	91	29.17
Reproductive right	144	46.15
Management of abortion	130	41.67
Treatment and prevention of STI	106	33.97
Dealing with sexual dysfunctions and Infertility	61	19.55
Others	16	5.13
Don't know	15	4.81

Knowledge of safe sexual behavior

Table 8 reveals the knowledge of safe sexual behaviour. 95.5% respondents had heard about safe sexual behaviour. Teachers (88.6%) were the most common sources that the respondents heard about safe sexual practice, whereas Magzine/Poster (33.6%) were the least common source of it. More than half of the respondents reported that Parents (57.4%), Health worker ((56.4%), Media/Radio/Television (53%) and Peer group/friends/relatives (50.3%) were the sources that the respondents heard about safe sexual practice. Regarding safe sexual practice, 76.5% respondents assumed that use of condom is the appropriate means of safe sexual practices. Majority of the respondents reported that, HIV/AIDS is impossible to cure 78.5%. 76.2% believed HIV/ AIDS can transmit by unsafe sex, contaminated blood, ID user and mother to child transmission. Likewise, 60% had knowledge that HIV can't transmit by hugging and kissing. It was found that 35.2% reported condom fully protects HIV.

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Table 8 Knowledge of safe sexual behavior

Characteristics	Frequency	Percentage (%)
Heard about safe sexual behavior		
Yes	298	95.5
No	14	4.5
Heard about safe sexual practice from		
Parents	171	57.4
Teacher	264	88.6
Peer group/ friends/ relatives	150	50.3
Media /radio/Television	158	53
Magazine/ poster	100	33.6
Health worker	168	56.4
Others	20	6.7
Perceived safe sexual Practices		
No sex/ abstinence	214	68.8
Only one faithful partner	195	62.7
Use of condom	238	76.5
Discuss about STI before sex	139	44.7
Regular STI,HIV, PID, pap test	135	43.4
Consider sexual activities other than vaginal oral or anal intercourse	40	12.9
Others	14	4.5
Know-what regarding HIV/AIDS		
Is impossible to cure	241	78.5
Condom fully protect HIV	108	35.2
Condom only reduce risk of HIV	168	54.7
It is sexually transmitted infection	190	61.9
Can't transmit by hugging, and kissing	191	62.2
Can transmit by unsafe sex, contaminated blood, ID user, mother to child	234	76.2
Others	34	11.1

Student's life satisfaction

The student's life satisfaction was shown in Table 9. Most of respondents were satisfied regarding sexual and reproductive life with their family. So had mean level and SD 6.73 ± 0.721 with family and least satisfaction with friends with mean 5.71 and SD ± 1.240. The mean and SD of overall satisfaction level was 6.08 ± 0.723.

Table 9 Student's life satisfaction

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Life satisfaction	Mean ± SD
Student's satisfaction with family	6.73 ± 0.721
Student's satisfaction with self	6.43 ± 1.248
Student's satisfaction with school	5.81 ± 1.270
Student's satisfaction with living environment	5.72 ± 1.450
Student's satisfaction with friends	5.71 ± 1.240
Overall Student's satisfaction	6.08 ± 0.723

Level of knowledge regarding adolescent sexual and reproductive health.

Among 312 respondents, more than half (52%) had adequate knowledge and 48% had inadequate knowledge on adolescent sexual and reproductive health as presented in table 10.

Table 10 Level of knowledge regarding adolescent sexual and reproductive health.

Level of knowledge	Frequency	Percentage (%)
Inadequate	151	48.4
Adequate	161	51.6

Univariate analysis of knowledge level of adolescences' sexual and reproductive health

Univariate analysis was performed to examine the association between various independent factors and knowledge and perspectives of adolescents. The variables which were significant at 95% confidence interval ($p<0.05$) in univariate analysis were put into multivariate regression analysis. Finally, the statistically significant difference of knowledge score was shown in different groups as displayed in table 10.

Association between socio-demographic characteristic and knowledge level of adolescent's sexual and reproductive health.

Ethnicity ($\chi2=13.329$, $p=0.020$), father's occupation ($\chi2=12.231$, $p=0.016$) and mother's occupation ($\chi2=10.813$, $p=0.029$) were significantly associated with the level of knowledge of adolescent's sexual and reproductive health. However, some variables such as gender, family type, education, grade, religion, distance to health facility and marital status were not significantly associated with the knowledge level of adolescent's sexual and reproductive health as presented in table 11.

Table 11 Association between characteristics of independent variables and knowledge level

Variables	Knowledge level		χ^2	*p*
	Adequate	Inadequate		
Gender			1.272	0.529
Male	87	87		
Female	73	64		
Third Gender	1	0		
Ethnicity			13.329	0.020*
Dalit	10	11		
Disadvantaged janajatis	9	20		
Disadvantaged non dalit	7	15		

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Religious minorities	2	1		
Relatively advantaged janajatis	4	8		
Upper caste group	129	96		
Family type			1.463	0.481
Nuclear	88	92		
Joint	61	51		
Extended	12	8		
Education			0.329	0.566
Basic level	33	35		
Secondary level	128	116		
Grade			0.129	0.937
Eight	31	31		
Nine	69	62		
Ten	61	58		
Religion			6.089	0.193
Hindu	142	130		
Buddhist	5	8		
Muslim	2	0		
Christian	12	10		
Others	0	3		
Father's occupation			12.231	0.016*
Agriculture	17	17		
Business	74	81		
Service	41	18		
Labor	8	4		
Others	31	21		
Mother's occupation			10.813	0.029*
Agriculture	36	26		
Business	46	61		
Service	29	14		
Labor	6	2		
Others	44	48		
Distance to health facility			0.933	0.334
<30 minute	107	108		
>30 minute	54	43		
Marital status			3.203	0.073
Married	2	7		
Unmarried	159	144		

*$p < 0.05$

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Association between practice of sexual behaviors and health resources with knowledge level of adolescent's sexual and reproductive health.

Resources of help regarding decision making or self-determination on reproductive health ($\chi2=16.818$, $p<0.001$), health service resources adolescents could get from ($\chi2=28.370$, $p<0.001$), availability of family planning methods in nearby health institution ($\chi2=4.985$, $p=0.026$), number of FP methods adolescents could get from nearby health institution ($\chi2=65.303$, $p<0.001$), and number of expectations from Government related to ASRH ($\chi2=50.114$, $p<0.001$) were found to be associated with the level of knowledge as presented in table 12.

Table 12 Association between practice of sexual behaviors and health resources related independent variables and knowledge level.

Variables	**Knowledge level**		χ^2	***p***
	Adequate	Inadequate		
Experienced any reproductive problems			0.392	0.531
Yes	8	10		
No	153	141		
Experienced reproductive problems			6.499	0.165
No	152	141		
1 type	4	6		
2 types	0	3		
3 types	3	1		
4 types	2	0		
Resources of help regarding decision making or self-determination on RH			16.818	0.001**
No	1	3		
1 type	55	74		
2 types	79	68		
3 types	26	6		
Health service resources adolescents could get from			28.370	<0.001**
1 type	25	47		
2 types	50	59		
3 types	51	38		
4 types	30	7		
5 types	5	0		
Ever been in sexual abuse or coerced			1.372	0.241
Yes	14	8		

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No	147	143		
Can discuss own sexual and reproductive life with parents			3.179	0.075
Yes	93	72		
No	68	79		
Exposure to sex education in school			1.098	0.295
Yes	142	127		
No	19	24		
Availability of any family planning methods in nearby health institution			4.985	0.026*
Yes	123	98		
No	38	53		
Total no. of family planning methods adolescents could get from nearby health institution			65.303	<0.001**
No	38	53		
1 kind	2	36		
2 kinds	23	20		
3 kinds	29	21		
4 kinds	26	15		
5 kinds	40	5		
6 kinds	3	1		
Prohibition to go health institution as religious faith			0.976	0.323
Yes	29	21		
No	132	130		
Numbers of expectations from government related to ASRH			50.114	<0.001**
1 kind	4	16		
2 kinds	5	29		
3 kinds	20	36		
4 kinds	109	64		
5 kinds	23	6		

*$p < 0.05$, **$p < 0.001$

Logistic regression analysis of independent factors of adolescent's sexual and reproductive health knowledge level

Based on the univariate analysis in Table 10 and Table 11, the associated factors were included as independent variables in logistic regression analysis. The assignments of each variable were shown in Table 12. Multivariate analysis was performed with selected factors which showed significant association in univariate analysis. The relationship of each

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independent variable was examined by using logistic regression to identify the most significant associated factors of adolescence sexual and reproductive health, when the effects of other factors were remaining constant. The variables which were significant at 95% confidence interval ($p<0.05$) in univariate analysis were put into multivariate regression analysis.

Logistic regression analysis showed that the independent influential factors of adolescent's sexual and reproductive health knowledge level included Ethnicity ($\chi2=6.376$, $p=0.012$), Resources of help regarding decision making or self-determination on reproductive health ($\chi2=4.261$, $p=0.039$), total number of health service resources ($\chi2=7.609$, $p=0.006$), total number of family planning methods adolescents could get from nearby health institution ($\chi2=22.771$, $p<0.001$), and the numbers of expectations from government related to ASRH ($\chi2=27.124$, $p<0.001$).

Table 13 Assignment table of each associated factors

Variables	**Assignments**
Ethnicity	Dalit =1; Disadvantaged janajatis =2; Disadvantaged non dalit =3; Religious minorities =4; Relatively advantaged janajatis =5; Upper caste group =6
Father's occupation	Agriculture=1; Business=2; Service=3; Labour=4; Others=5
Mother's occupation	Agriculture=1; Business=2; Service=3; Labour=4; Others=5
Resources of help in regarding decision making or self-determination on reproductive health	No=0; 1 kind=1; 2 kinds=2; 3 kinds=3
Total number of health service resources adolescents could get from	No=0;1 kind=1;2 kinds=2; 3 kinds=3; 4 kinds=4; 5 kinds=5
Availability of any family planning methods in nearby health institution	No=0; Yes=1
Total number of family planning methods adolescents could get from nearby health institution	No=0; 1 kind=1; 2 kinds=2; 3 kinds=3; 4 kinds=4; 5 kinds=5; 6 kinds=6
Numbers of expectations from government related to ASRH	No=0; 1 kind=1; 2 kinds=2; 3 kinds=3; 4 kinds=4; 5 kinds=5

Table 14 Logistic regression analysis of independent factors of adolescent's sexual and reproductive health knowledge level

Variables	**B**	**Standard Error**	χ^2/df	***p***	**OR**	**95% *CI* of OR**	
						Lower	Upper
Ethnicity	0.200	0.079	6.376	0.012	1.221	1.046	1.426

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Resources of help regarding decision making or self-determination on reproductive health	0.465	0.225	4.261	0.039	1.592	1.024	2.475
Total number of health service resources adolescents could get	0.419	0.152	7.609	0.006	1.520	1.129	2.046
Total number of family planning methods adolescents could get from nearby health institution	0.364	0.076	22.771	<0.001	1.439	1.239	1.671
Numbers of expectations from government related to ASRH	0.822	0.158	27.124	<0.001	2.276	1.670	3.102
Constant	-6.365	0.878	52.502	<0.001	0.002		

4. Discussion

Practice of sexual behavior and health resources that adolescents could get

The finding of the study revealed that more than 90% of respondents did not experience any reproductive problems and 1/16 adolescents reported to be suffered from reproductive problems like unwanted pregnancy, STIs, subsequent risk of infertility, early marriage/early motherhood, HIV/AIDS, PID and Others. The findings was much less than that from the descriptive studies conducted by Ling et al. in China, where, nearly four by fifths respondents had at least one reproductive disease.(14) The prevalence of reproductive health problems was also high among non-nepali adolescents.(13, 14) But it is in consistency with other findings. (17–19) In Nepal, except few exceptional cases, there are strict rules regarding sexual matter and cultural prohibition to engage in sexual activities. Early marriage and early pregnancy may occur as traditionally but extra marital activities were fewer in Nepal. Among those who experienced any reproductive problems, most of them experienced the unwanted pregnancy because there was no such strong law against violation and rape. And there was no strong implementation against the violation. Power disequilibrium and unstable political situation resulted in flexibility in sensitive matters. There was no such law against criminal, gambling, rapist, and other sexual abuses so that many cases of unwanted pregnancy occurring in the country. Early marriage was in vigorous tract but they really don't want to be mother. Traditionally women were considered as machine of child bearing and responsibility of it. So, unwanted pregnancy was high in Nepal.

Nearly two third (63.6%) of the respondents had self-decision making capacity on reproductive health right. A study done in Sub-Saharan Africa showed nearly similar percent (68.66%) of female adolescents having the capacity to make reproductive health decisions. (20) In contrast, a cross-sectional study carried out in Nepal by Nepal et al. presented that only one-fourth (25.1%) of the women were autonomous in making their sexual and reproductive health decisions. (21) The difference is because, in Nepal, despite the legal equality of males and

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females, the society is predominantly male-dominated. However, certain Nepalese communities are evolving over time due to education and generational changes.

Most (70.8%) of the respondents received reproductive health related services from government hospital. The previous study done in four districts of Nepal demonstrated that nearly one-third of adolescents were utilizing reproductive health services from the nearest government health facility. (22) In Nepal, basic health care services are available free of cost from every ward level health facility. Reproductive health services are also available free of cost from every Basic Health Care Centers (BHCC) of Nepal.

According to the study, 7% of respondents were coerced or sexually abused. This finding was in consistency with the findings of NDHS (2022), which revealed that among girls aged 15–19 years, 7 % women are experiencing sexual violence. The percentage of adolescents reporting sexual violence was 24% in cross-sectional study done by Lim MSC et al. in southwest of China.(23) A literature review performed by Selengia et al. presented that the prevalence of child sexual abuse (CSA) in China and India ranges from 3.3% to 42.7% for females. In Hong Kong and Sri Lanka, the prevalence of male CSA is 4.3% and 58% respectively. The prevalence of CSA in Tanzania and Ethiopia is 2.1% and 68.7% for females respectively. The prevalence of male CSA in South Africa ranges from 4.1% to 60%. (24) Another study done in South India revealed nearly similar percent of sexual abuse among male (36%) and female (35%) adolescents.(25) Sexual abuse seemed similar to the country wise data and seemed little than other studies. That was because sexual relation before marriage or extra marital relation was considered as violation of social norms in Nepal. The society itself could punish to the criminal and victim both. Once they accused, they had problem to marry again. That means criminal may have bad reputation in the society. So it is lesser prevalence than other country but itself a big problem according to adolescence safety. There is no CCTV camera monitoring system, and the criminal could easily escape from his blunder. On the other hand, men were considered as common error and women are considered as blundered due to societal biased norms.

Furthermore, respondents reported that Condom, OCP, Dipoprovera, Implant and IUCD were available family planning methods in nearby health institution, which is in consistence with other studies done in Nepal. (24, 25) This indicated that there was good awareness of contraceptive types and its availability in study area of Nepal; however, it is important to explore the rate of service utilization among adolescents. The family planning methods were freely available and short acting reversible contraceptive device can be distributed by any health worker and long acting contraceptive device could only be provided by skilled man power in the study area. Due to good plan, policy and supervision/ monitoring of family planning program, people are notified regarding its type and availability. If adolescence knows about as many as type of family planning methods, obviously they will have more knowledge and they can utilize their knowledge to protect them from serious complication regarding sexual and reproductive health. They can also share the message to other peer groups.

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Student's Life Satisfaction

Findings of the present study displayed that most of the respondents had good life satisfaction with their family. They had mean level and SD 6.73±0.721. The respondents had least life satisfaction with their friends with mean 5.71 and SD±1.240. The mean and SD of overall satisfaction level was 6.08 ± 0.723. The same type of study done in China (2013) among adolescents showed slightly less satisfaction with family 5.10 ±1.39 mean and SD. Moreover, they were more satisfaction with friends 5.28+1.23 mean and SD. (28) The findings were in consistent with the study conducted by Phillips, 2012 to explore adolescent well-being in southern United States, where sixty-one percent of the study participants were very happy with their families.(29) Similarly, the mean score of sex life satisfaction was moderately high in a study done by Neto 2012. (30) Nepal is a developing country. There are limit means and resources. Development is in pace of tortoise walking due to unstable political situation. So, adolescents are habitual on this current situation. They don't have more demand than country's capacity. That's why satisfaction level seemed good. In China, life satisfaction seemed slight less because if person has more option he/she can be over ambitious and demand also increases. If there is no option, it is better to satisfy what we have. It can be concluded that satisfaction is the best remedy of health. So parents, family, school, friends/ peers and our society are the main predictors of life satisfaction, and need to maintain combined relationship with each other to make own self happy consequently balance adolescent's reproductive life also.

Level of knowledge regarding adolescent sexual and reproductive health

Findings of the present study showed that more than half of students had adequate level of knowledge regarding adolescent sexual and reproductive health. This finding was similar to the study done by Chitra et al. in Lalitpur district of Nepal in 2020 where more than half (53.4%) of adolescents had adequate knowledge on sexual and reproductive knowledge. (31) In contrast, a study performed in Nepal in 2010 demonstrated that rural youths have poor sexual health knowledge. (32) A research completed in Bangladesh also suggest that adolescent girls in rural Bangladesh have poor knowledge on reproductive health. (33) Neelamani et al. revealed different result for the levels of sexual and reproductive knowledge among Sri-Lankan adolescents. They indicated alarmingly low levels of sexual and reproductive knowledge among adolescents. (34) The variations of level of knowledge might be due to variation in different, socio-demographic variables, cultures and ethnic groups having their own norms and values around sexuality. The respondents were from the different economical background which directly affects their knowledge level. There are wide disparities between social groups, caste, ethnicity, gender and family background.

4. Conclusion

Based on the findings of the study, it is concluded that nearly half of adolescents in the study area lacked adequate knowledge of sexual and reproductive health. Independent influential factors of knowledge level of adolescence's sexual and reproductive health were ethnicity, resources of help regarding decision making on reproductive health, total number of health service resources adolescents could get, total number of FP methods adolescents could get from nearby health institution and number of expectations from government related to ASRH.

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Adolescents in Nepal were still facing many problems related to sexual and reproductive health including sexual abuse, unwanted pregnancy and coercion. At the same time, most adolescents could not talk about sexual life with their parents, and some adolescents still could not get enough knowledge of sexual education from schools. Teenagers hoped that the government should raise public awareness, disseminate information through the media and improve the accessibility of family planning programs to promote adolescent sexual and reproductive health. So government of Nepal should make different plans and policies based on above findings to address the adolescent's sexual and reproductive health problems and promote their health.

Study findings can be used by the National Planning Commission as well as Ministry of Health to develop policy, strategy for promoting health status of adolescents' sexual and reproductive health and prevent different adolescence sexual and reproductive health related infections.

The study could not reveal the relation between service availability and adolescence friendly health facility for all adolescents. Thus research can be conducted for the above contents. Due to higher prevalence of sexual and reproductive health related problems including sexual abuse, unwanted pregnancy and coercion closer look and understanding through research among adolescence is necessary.

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Competing interest

The authors declare no competing interests.

Author Contributions

Concept and design: SS and AC, statistical analysis: PG and KNP, writing of the manuscript: SS, KNP and PR, revision and editing the manuscript: AC, PG. All authors read and agreed with the contents of the final manuscript.

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