

Research Article

Knowledge Gaps in Reproductive and Sexual Health Among School Going Adolescent Girls in Western Uttar Pradesh, India

Ridhi Mehra

Assistant Professor, North DMC Medical College and Hindu Rao Hospital, Delhi, India

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I N F O

E-mail Id:

ridhimehra8888@gmail.com

Orcid Id:

<https://orcid.org/0009-0008-4927-4711>

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A B S T R A C T

Background: Adolescence represents a critical developmental phase bridging childhood and adulthood. During this period, girls often encounter multiple social and health-related challenges. Limited awareness of reproductive and sexual health exposes them to risks such as poor menstrual hygiene, unintended pregnancies, unsafe abortions, reproductive tract infections (RTIs), and sexually transmitted infections (STIs), including HIV/AIDS.

Objectives: The present study was conducted to assess the level of knowledge and awareness regarding reproductive and sexual health among school-going adolescent girls.

Material and methods: A descriptive cross-sectional study was carried out between November 2020 and October 2022 in the urban field practice area of a tertiary care institution. The study included 1,000 adolescent girls aged 10–19 years who had attained menarche.

Results: The majority of participants were aged 14–16 years. In total, 574 participants (57.4%) used sanitary pads, and 304 (30.4%) used cloth pieces. Only 12.2% of adolescent girls who were having reproductive health morbidities were willing to seek health care. Condoms (87.7%) and oral contraceptive pills (59.3%) were the most commonly known methods of family planning. Regarding the awareness of HIV/AIDS, 63.2% of adolescent girls had heard of it; 28.9% knew that it could be prevented; and 42.4% knew about the modes of transmission.

Conclusion: Significant gaps exist in knowledge related to RTIs/STIs, HIV/AIDS, and reproductive health education. Integrating comprehensive reproductive health education into adolescent development is essential.

Keywords: Adolescent girls, Reproductive health, Sexual health

Introduction

“Investing in the health and well-being of adolescents, especially adolescent girls, should be a top priority for national and international policy makers.”

Natalia Kanem, Executive Director UNFPA

Adolescence, defined by the World Health Organization as the age group of 10–19 years,¹ is a phase marked by rapid physical, psychological, and social changes.² It serves as a transitional stage between childhood and adulthood, during which individuals develop behaviors and habits that influence their long-term health.

India’s total population is approximately 1.46 billion, of which around 253.2 million individuals fall within the 10–19-year age group.³ This stage provides an important opportunity to promote healthy behaviors and prevent future health problems. In particular, adolescent girls represent a vulnerable group, as their health status has direct implications not only for their well-being but also for future generations.

Reproductive and sexual health is a crucial component of overall health in this age group. However, due to changing societal norms, increasing urbanization, and limited access to accurate information, adolescents may engage in risky behaviors at an early age. This increases their susceptibility to issues such as poor menstrual hygiene, unintended pregnancies, unsafe abortions, reproductive tract infections, and psychosocial consequences like school dropout, early marriage, and mental health concerns.

Despite constituting a large segment of the population, many adolescents lack adequate knowledge about reproductive and sexual health. This gap calls for focused research and interventions. Therefore, the present study was undertaken to assess awareness levels regarding reproductive and sexual health among school-going adolescent girls.

Methods

Study Design

A descriptive cross-sectional study was conducted in schools located within the urban field practice area of a tertiary care hospital. This study was conducted between November 2020 and October 2022.

The sample size was calculated on the basis of the prevalence of RTI symptoms in adolescent women in previous literature. In the previous study, the prevalence of RTI symptoms in adolescent females was 15 percent,⁴ with a 95% confidence level and the maximum error in the estimate willing to be tolerated, say $\pm 5\%$; the expected sample size is 967. So total 1000 sample size were taken.

Inclusion criteria

Adolescent girls of the age group 10-19 years, who are attending school from classes 6th to 12th standard, were included.

Exclusion criteria

Girls who were absent from school on three repetitive visits, who had not attained menarche, and physically and mentally handicapped girls were excluded.

Instrument tool

A pre-designed and pre-tested semi-structured questionnaire taken from “Illustrative Questionnaire for Interview Surveys with Young People”⁵ and modified accordingly and used for data collection. The questionnaire contained the information regarding socio-demographic characteristics, including age, sex, education, and occupation of parents; knowledge and awareness regarding reproductive and sexual health, which included the parameters like menstruation, marriage, pregnancy, contraception, sexuality, sexually transmitted infections, HIV/AIDS, and health-seeking behavior regarding RTIs.

Data collection

Permission to carry out the study was sought from school authorities. The data collection was done using a semi-structured, self-administered questionnaire prepared in the English language. The students were explained the purpose of the study and the method of filling out the questionnaire. A questionnaire was distributed to the girls in school, and they were asked to fill out the questionnaire. Any doubts while filling the questionnaire were addressed at the same time. After collecting the data, health education sessions were conducted to educate the students and clear the doubts about the reproductive health issues. Ethical approval was obtained from the Institutional Ethics Committee prior to the initiation of the study.

Statistical Analysis

Statistical analysis was carried out with the help of Microsoft Excel and Epi Info 7.1 software. Data were analyzed by using Statistical Package for the Social Sciences software (SPSS) version 21.0. Various parameters were analyzed through different statistical tools, techniques, and tests, such as the chi-square test, graphic representation of data, frequency representation of data, etc. A p value of less than or equal to 0.05 has been considered to be significant.

Operational Definitions

Reproductive Health (Related definitions)⁶

- **Menarche:** The onset of menstruation for the first time.
- **Menstruation:** It is the monthly vaginal bleeding coming usually at the interval of about 28 days from the estrogen-progesterone-primed uterine endometrium.
- **Regular menstrual cycle:** The menstrual cycle coming at a regular interval, irrespective of the duration between two menses for the last three cycles, is called a regular cycle.

- **Irregular menstrual cycle:** Any deviation from a regular menstrual cycle is called an irregular cycle.
- **Dysmenorrhea:** Painful cramping pain accompanying menstruation lasting for about 12 to 24 hours.

Menstrual blood flow

- **Scanty:** The menstruation lasts for 1 to 2 days, and the amount of blood loss is very small.
- **Moderate:** The menstruation lasts for 3-4 days, and average blood loss is 80 ml. (estimated 50-200ml)
- **Heavy:** The passage of large clots during menstruation is called heavy blood flow.

Results

The majority (58.4%) of girls belonged to the age group of 14-16 years, followed by 10-13 years (28.5%), and the least number was seen in the 17-19 years (13.1%) age group. The overall mean age of the participants was 14.58 ± 1.7 years (mean + S.D.) with a range of 11-18 years. The majority of adolescent girls were Hindus (83.6%). The socioeconomic status was assessed using Modified Kuppuswamy’s classification (2021).⁷ The majority (36.4%) of the girls belonged to socio-economic class Upper Lower (IV) [Table 1].

In the present study, the majority (58.1%) of girls attained menarche in the 13-14 years age group. The mean age of attainment of menarche was 13.25 ± 1.2 years (mean + S.D.).

The majority (46.2%) of girls had no idea about the cause of menstruation. Menstruation is a normal physiological

phenomenon that was known to few participants (31.1%). 44.3% of girls had no idea from where menstrual blood comes, and only 30.7% mentioned it to be from the uterus. Normal duration of menstrual flow was also mentioned correctly by most of the girls (41.5%). The majority of the girls received the information regarding menstruation from their mothers (70.4%), followed by friends (22.2%), teachers (5.6%), and mass media (1.9%). Among the total 1000 girls, the majority of the girls (42.6%) were using sanitary pads as menstrual absorbents.

The present study shows that there is a statistically significant association between the educational status of mothers of adolescent girls and absorbent material used during menstruation. As the educational status of adolescent girls increases, the use of sanitary pads also increases [Table 3].

More than 50% of girls knew that the first sign of pregnancy is a missed period. Less than 26% were aware of contraceptives. The maximum number of girls preferred the Internet (54.7%) for getting sex education, followed by mothers (16.7%), doctors (15.3%), and teachers (13.3%).

Table 5 shows that 632 (63.2%) of adolescent girls had ever heard of HIV/AIDS, and 198 (31.3%) girls knew the full form of AIDS. 424 (42.4%) girls knew about modes of transmission of HIV. 289 (28.9%) girls knew that AIDS can be prevented.

Table 1. Distribution of Study Subjects According to the Socio-Demographic Variable

Sociodemographic	Categories	Frequency	%
Variables			
Religion	Hindu	836	83.6
	Muslim	135	13.5
	Sikh	21	2.1
	Christian	8	0.8
Type of family	Nuclear	566	56.6
	Joint	126	12.6
	Three-generation	308	30.8
Grades	6th-8th	285	28.5
	9th-10th	584	58.4
	11th-12th	131	13.1

Mother's education	Illiterate	97	9.7
	Primary School	236	23.6
	Middle School	258	25.8
	High School	141	14.1
	Intermediate	181	18.1
	Graduate or	85	8.5
	Postgraduate	-	-
	Profession or	2	0.2
	honours	-	-
Socio-economic	Upper	43	4.3
Class	Upper middle	194	19.4
	Lower middle	283	28.3
	Upper lower	364	36.4
	Lower middle	116	11.6
Total		1000	100

Table 2. Knowledge Regarding Menstruation in Girls

Variables	-	Frequency	%
Female reproductive tract consists of ovaries, uterus, vagina	YES	678	67.8
	NO	322	32.2
Uterus is the source of menstrual blood	YES	307	30.7
	NO	693	69.3
Reaction of first menstruation	Normal	468	46.8
	Upset	211	21.1
	Scared	184	18.4
	Guilt	63	6.3
	Discomfort	74	7.4
Source of information	Mother	476	47.6
	Teacher	86	8.6
	Friends	212	21.2
	Media	266	26.6
	Elder sister	133	13.3
Type of absorbent used during Menstruation	Sanitary pads	574	57.4
	Piece of cloth	304	30.4
	Others	122	12.2

Number of times absorbent changed (per day)	Once daily	324	32.4
	More than once daily	562	56.2
	Once in 2-3 days	114	11.4
Reasons for not using sanitary pads*	Lack of knowledge	65	15.2
	High cost	312	73.2
	Unavailability	121	28.4
	Shyness	54	12.6
Disposal of used menstrual absorbent	Cloth pieces reused	33	3.3
	Waste bin	563	56.3
	Sanitary latrine	404	40.4
Restriction practised during menstruation*	Religious occasion	892	89.2
	Absence from school	89	8.9
	Household work	222	22.2
	Attending family function	67	6.7
		-	-
No restriction	44	4.4	

Table 3. Association Between Educational Status of Mothers of Adolescent Girls and Absorbent Material Used During Menstruation

Mother's education	Absorbent used during menstruation			Total n(%)
	Piece of cloth	Sanitary pad	Others	
Illiterate	57(5.7)	17(1.7)	23(2.3)	97(9.7)
Primary school	96(9.6)	87(8.7)	53(5.3)	236(23.6)
Middle school	87(8.7)	139(13.9)	32(3.2)	258(25.8)
High school	34(3.4)	101(10.1)	06(0.6)	141(14.1)
Intermediate	27(2.7)	146(14.6)	08(0.8)	181(18.1)
Graduation	3(0.3)	82(8.2)	0	85(8.5)
Profession	0	02(0.2)	0	02(0.2)
Total	304(30.4)	574(57.4)	122(12.2)	1000(100)

Chi-square=219.536, d.f=12 p-value <0.001

Table 4. Distribution of study participants according to knowledge regarding contraceptives(n=1000)

Variable	-	Frequency	%
Ever heard of contraceptives(n=1000)	YES	439	43.9
	NO	569	56.9
Is doctor's prescription necessary for obtaining contraceptives(n=431)	YES	102	23.7
	NO	329	76.3
Contraceptives known(n=431)	Condoms	378	37.8
	Birth control pills	256	25.6
	Injectables	58	5.8
	Copper-T	31	3.1
	Tubectomy	54	5.4
	Vasectomy	6	-

Ever heard of STI(n=1000)	YES	313	31.3
	NO	687	68.7
Preference for sex education (n=1000)	Mother	167	16.7
	Teacher	133	13.3
	Doctor	153	15.3
	Internet	547	54.7
Reproductive health education in school curriculum	YES	735	73.5
	NO	188	18.8
	Don't know	77	7.7
Ever felt seeking treatment advice/ treatment regarding RTI's	YES	575	57.5
	NO	425	42.1
Preference for seeking advice regarding RTI's(n=575)	Lady doctor	461	80.1
	ANM	16	2.8
	Male doctor	8	1.4
	Teacher	47	8.2
	Others	43	7.5

Table 5. Awareness of adolescent girls regarding HIV /AIDS

Variable	-	Frequency	%
Ever heard of AIDS(n=1000)	YES	632	63.2
	NO	368	36.8
Full form of AIDS(n=632)	YES	198	31.3
	NO	434	68.7
HIV-AIDS spreads by sexual contact and blood transfusion(n=1000)	YES	424	42.4
	No	576	57.6
AIDS can be prevented(n=1000)	YES	289	28.9
	NO	711	71.1
Source of knowledge about AIDS (n=632)	Friends	140	22.2
	Family members	84	13.3
	Media/internet	242	38.3
	Teachers	166	26.2

Discussion

In this study, the maximum number of girls, that is, 58.4%, were found between the age group of 14-16 years, which was similarly observed in a study conducted⁸ in the Rajkot district, Gujarat, where 68.5% of adolescent girls belonged to the 14-16 years age group. The mean age of participants in our study was 14.58 ± 1.7 yrs. In another study,⁹ 67.55% of the girls were between 14 and 16 years; the mean age of the girls was 14.70 ± 1.5 years. Most of the participants in the present study were from nuclear families (56.6%), followed by joint families (12.6%) and three-generation families (30.8%). In this study it was observed that 9.7%

of mothers of adolescent girls were illiterate, while 90.3% of mothers were literate. A similar study on adolescent girls and reported that 90.6% of mothers were literate. Education is a crucial and basic factor for the development of society. Education is a major factor that influences health. Illiteracy coincides with poverty, malnutrition, ill health, and high infant and child mortality rates. In the present study, 364 (36.4%) participants belonged to the upper lower class and 283 (28.3%) to the lower middle class. In a study on adolescent girls it was observed that the majority of the respondents belonged to upper lower (class IV) and lower middle (class III) socioeconomic classes. Socioeconomic status determines the purchasing power,

quality of life, deviant behavior, and health-seeking pattern of the adolescents.¹⁰

The age at menarche among participants in the present study ranged from 11 to 16 years, with a mean age of 13.25 ± 1.2 years. Comparable findings have been reported in previous studies. Singh M et al.¹¹ documented a mean age of 13.45 ± 0.95 years, while Negi P et al.¹² in Uttarakhand observed a mean age of 13.5 ± 0.64 years. In contrast, Aswathy RSV et al.¹³ reported a slightly lower mean age of 12.16 ± 0.92 years in an urban population. Variations in the age at menarche across studies may be attributed to differences in geographic location, environmental conditions, nutritional status, socioeconomic background, and overall health of the study populations.

In the present study the main source of information regarding menstruation was the mother (47.6%) of the girls. In a study conducted by Kumar C et al.¹⁴ the major source of information for girls was mother (50.9%). Similarly, in the study by Savanthe AM et al.,¹⁵ it was found that 53.5% of the respondents received information from mothers, and the least used source was media. Maternal education significantly influences awareness regarding puberty and reproductive health among adolescents. This highlights the crucial role of mothers as primary sources of health education on menstruation and menstrual hygiene. A close relationship and better communication between mother and daughter can play an important role in forming a lifelong bond for a healthy future. Open communication between mothers and daughters on this topic can lead to better-informed adolescents, who are likely to pass on accurate knowledge to the next generation.

Most of the girls (57.4%) used sanitary pads as menstrual absorbents; this was similar to the findings of the study done in urban Ahmedabad,¹⁶ which showed 56.2%. In the present study, 30.4% of the cloth pieces were used by the adolescent girls. 25.4% girls used cloth pieces in a similar study by Shantanu Sharma S et al.¹⁷ When enquired about reasons for no usage of sanitary pads, 73.2% of girls did not use them because of high cost. Another study by Gupta M et al.¹⁸ in Ghaziabad found the main reason for not using sanitary pads was lack of affordability (67.4%). In the present study, a statistically significant association was found between the absorbent material used and that of the mother's educational level. Usage of cloth pieces was more among the subjects whose mothers' literacy levels were lower. This reveals that the literacy level of the mother had an influence on the usage of sanitary pads.

The maximum number of girls, i.e., 89.2%, did not attend religious occasions during their cycle, 22.2% were not allowed to do household work, and around 8.9% of girls remained absent from schools during menstruation. Surprisingly, 4.4% of girls do not have any kind of restrictions

during their menstruation. In a similar study by Prajapati J et al.,¹⁹ 100% of girls have different types of restrictions during menstruation; the most common was avoidance of religious places/temples (87.5%). Das B et al.²⁰ observed 94% of girls were restricted from attending puja, 83.4% reported restriction on attending family functions, 33% reported restriction on doing household work, and 10.1% reported that they were not allowed to attend school during menstruation. Different restrictions were practiced by most of the girls in the present study, possibly due to their ignorance and false perceptions regarding menstruation. Women are treated as impure and unholy during menstruation. There are still a lot of myths and misconceptions surrounding menstruation.

Awareness about contraceptives was present in 43.1% of participants. A similar finding had been reported in a study conducted on adolescent girls in the urban slum of Pune by Shankar P et al.²¹ where awareness about contraceptives was present in <30% of subjects.

In the present study, 73.5% of participants expressed the need for inclusion of sex education in the school curriculum. Similar observations were reported by Grover S et al.,²² where 74.25% of girls considered sex education essential for adolescents. Likewise, Dogra A et al.²³ found that a majority (88%) supported its integration into the curriculum. These findings highlight the importance of incorporating sex education as a continuous component of the learning process, beginning in early life and extending into adulthood. Comprehensive sex education should promote understanding of values, sexuality, and interpersonal relationships, while also fostering self-esteem, self-awareness, and a sense of responsibility. In the absence of accurate information, adolescents often rely on peers, which may lead to misconceptions. Therefore, implementation of evidence-based, school-centered sex education programs with accessible and user-friendly resources is essential.

It is encouraging to note that 57.5% of girls in the present study felt seeking treatment for RTI. Treatment-seeking behavior will help in planning interventions for this vulnerable group. Emphasis should be given to making them aware of the importance of seeking health care by educating them regarding the same. In the present study it was observed that 80.1% of girls preferred a lady doctor for consultation for RTIs if needed. In the study by Sreekumar S. et al.,²⁴ 63% of adolescents preferred to consult a doctor or seek advice from family in case of a sexual illness.

In the present study it was concluded that 63.2% of adolescent girls had heard of HIV/AIDS; a similar finding was also reported by Sharma S et al.,¹⁷ where 60% of girls had awareness of HIV/AIDS. The awareness may be due to various multimedia campaigns involved in increasing

AIDS awareness in urban settings. Only 31.3% knew the full form of AIDS. About 36.67% of respondents knew the full form of AIDS, as observed by Kotwal N et al.²⁵ Dogra A et al.²³ found that 32.1% knew about the abbreviation AIDS. In this present study, 42.4% of girls knew about HIV/AIDS spread by sexual contact and blood transfusion. Mou SZ et al.²⁶ reported 48% of girls knew that HIV/AIDS transmission occurs through blood products, and 38% of girls knew about transmission from sexual intercourse. Adolescence is a very vulnerable age, and knowledge regarding correct modes of transmission will protect adolescents from this deadly disease. In this study 28.9% of girls knew that AIDS can be prevented. In a study by Jain R et al.,⁹ 67.37% of study participants reported that AIDS can be prevented. Reddy, AKS, et al.²⁷ conducted a study in Telangana where only 6% of the subjects felt there is a cure for HIV/AIDS.

The main source of information about AIDS was from media/internet (38.3%), followed by teachers (26.2%), friends (22.2%), and least was from family members (13.3%). Gollakota S et al.²⁸ reported that media served as the primary source of information on HIV, followed by interpersonal channels such as friends (23%), teachers (8%), and family members (0.2%). These findings suggest that adolescents predominantly depend on peers and media for information, which may not always be accurate or reliable. This reliance highlights gaps in formal information channels, including limited interaction with healthcare providers, inadequate availability of adolescent-friendly health services, and insufficient coverage of such topics within the school curriculum.

Conclusions

The findings of the study indicate inadequate knowledge and awareness regarding menstruation and reproductive health among adolescent girls. Poor menstrual hygiene practices were also observed. There is an urgent need to provide accurate and age-appropriate education on reproductive health to promote safe practices and reduce the risk of infections.

Additionally, strengthening the role of mothers and teachers as primary sources of information can significantly improve awareness. Implementing school-based health education programs is essential to equip adolescents with the knowledge and skills required for maintaining reproductive health and overall well-being.

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