

Knowledge, Attitude and Practice of Sexual and Reproductive Health Among Older Adolescent Girls in Bangladesh: An Institution-Based Cross-Sectional Study

Muhammad Zakaria

University of Chittagong

Junfang Xu

Zhejiang University School of Medicine

Farzana Karim

University of Chittagong

Subarna Mazumder

University of Chittagong

Feng Cheng (✉ fcheng@mail.tsinghua.edu.cn)

Tsinghua University

Research

Keywords: Sexual and Reproductive Health, Knowledge, Attitude, Practice, Adolescent Girls, Bangladesh

Posted Date: August 26th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-64357/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: Improving the sexual and reproductive health (SRH) of adolescent girls is one of the primary agenda of the Sustainable Development Goals (SDGs). Adequate and accurate knowledge, favorable attitude, safe behavior, and regular practice contribute to the adolescent girls' SRH, maternal, and child health. In the background, this study aims to explore the level of knowledge, attitudes, and practices (KAP) of SRH among college-going older adolescent girls in Chittagong district, Bangladesh.

Methods: An institution-based cross-sectional study was conducted in four colleges among the older adolescent girls age group of 16-17 (N = 792) attending a higher secondary grade in Chittagong district. Data were collected using a structured and self-administered questionnaire. Descriptive statistics and multiple linear regression analyses were used to summarize the SRH-related KAP and identify the associated factors, respectively.

Results: 62% of study participants had the awareness that both physical and psychological changes occur in the adolescence period, while only 36% knew that menstruation is not a disease. Besides, only 30% of adolescent girls were informed about taking birth control has no adverse effect on the sexual relationship of a couple. Moreover, only 40% of students were learned that HIV could not be spread through the mosquito and flea, whereas only 25% knew that transmission of HIV is unlikely from an infected person's coughing and sneezing. Of older adolescent girls, 35% disagreed perfectly whether sexual education can lead to more sexual activity. Besides, more or less 20% of participants opined that adolescent girls should refrain from going outside even to the school, entering into the kitchen, touching anyone, brushing hair, and see in the mirror. Moreover, 52% of adolescent girls wanted to learn more details about SRH, while 48% felt timid and afraid of their puberty changes. Besides, 62.5% of adolescent girls reported their using cloth during the menstrual cycle instead of the sanitary pad. Standardized coefficients beta (β) and p value $< .05$ in linear regression analyses explored that adolescent girls' study of science, urban residence, reading or watching SRH contents on the mass media appeared as the more significant predictors for outcome variables.

Conclusion: Many problems related to SRH exist among older adolescent girls in Bangladesh, such as behaviors and social constraints associated with menstruation, myths, and assumptions, recognition of the value of awareness and knowledge of reproductive health. Therefore, strengthening SRH-related comprehensive education programs incorporating into the curriculum, effective use of mass media, and supplying behavioral change communication materials are essential.

Plain Summary

Improving the sexual and reproductive health (SRH) status of adolescent people is a major concern of the global health agenda. In Bangladesh's perspective, it is imperative that the adolescent girls should have the necessary knowledge and positive attitude on SRH so that this large cohort can make informed decisions with regard to their SRH that will also contribute to declining in adolescent fertility rate, which is

a significant concern for the country. Therefore, this study aims at assessing the level of knowledge, attitudes, and practices (KAP) of SRH among college-going girls and associated factors in Chittagong district, Bangladesh.

A college-based cross-sectional study was conducted among 792 older adolescent girls aged 16–17 years in Chittagong district.

We found that about three-fourth of adolescent girls are either unaware or unsure about menstruation is not a disease instead is a natural process. More than half of the respondents had inaccurate knowledge of the causes of transmission HIV. In attitude toward SRH, about three-fourth had a negative attitude towards the importance of sexual education, and they opined that it might lead to more sexual activity. In addition, different myths are common in the rural area as regards to menstruation-related restrictions among one-fifth of adolescent girls those prohibit them from different regular activities. Moreover, about half of the study participants had a dearth of demand for further information on SRH, and almost the same percentage felt timid and afraid of their adolescent physical and psychological changes. In addition, two-third of adolescent girls reported their using cloth during a menstrual cycle instead of the sanitary pad. Adolescent girls' study of science, urban residence, reading, or watching SRH contents on mass media are the important factors associated with better KAP of SRH.

Strengthening SRH-related comprehensive education programs incorporating into the curriculum, effective use of mass media, and supplying behavioral change communication materials are essential for meeting the sexual and reproductive health needs of adolescent girls and their rights.

Background

Adolescence, a near-universal period of the socialization cycle, is characterized as a phase of human growth and development that occurs after childhood and before adulthood and includes those between the ages of 10 and 19 [1]. Adolescence is a transitional stage that includes multidimensional changes: physical, psychological, emotional, and social [2]. Bangladesh has a large adolescent population of approximately 36 million, which is more than one-fifth of the total population is between the ages of 10 and 19 [3]. This population will continue to increase according to population projections [4]. According to the population census 2011, among the adolescent population, about 49% are girls [5].

In Bangladesh, the sexual and reproductive health (SRH) status of the adolescent population, including those who are unmarried and married, remains an area of significant concern. Many adolescents, especially adolescent girls in Bangladesh, are not given adequate opportunities to enhance their overall health in their process of growing up [6]. In making informed life choices, they begin to encounter tremendous challenges, for example, a substantial number of adolescents experience risky or unwanted sexual behaviors, do not get prompt or proper care [6]. These caused the high percentage of child marriage practice, adolescent pregnancy, domestic violence, rising incidence of sexual exploitation, and higher dropout rates due to Bangladesh's patriarchal social norms [6]. Despite the legal age of marriage for women being 18 years in Bangladesh, a large proportion of marriages still take place before this [7].

The rate of child marriage is still among the world's highest with the median age of 16.1 years at first marriage among women aged 20–49 [8]. With the highest rate of adolescent fertility, there were 113 live births per 1000 women aged 15–19 years, and 31% of married adolescents aged 15–19 are already mothers or pregnant with their first child, while nearly 70 percent give birth at 20 years [9]. Besides, adolescent girls also often face a variety of other forms of abuse. Everything prone to verbal bullying and assault, physical aggression, and sexual exploitation [8]. For example, the first Violence against Women (VAW) survey in Bangladesh of 12,600 women aged 15 and over found that 42% of adolescent girls had experienced violence at the hands of their husband and 11% had experienced violence at the hands of a non-partner, while three-quarters of women had experienced forced sex in adolescence, with 40% having been forced before the age of 15 [10].

SRH is still a cultural taboo in Bangladesh, especially for adolescents people, and SRH information and services present a critical gap for unmarried adolescents, particularly girls, which leaves them vulnerable to health risks and discriminatory care [11]. Parents do not feel comfortable discussing SRH issues with their adolescent children, and schools provide minimal information on SRH [12]. In addition, Bangladesh has no nationally representative data that measures the level of knowledge on SRH among adolescent populations [6]. The BDHS (2014), which highlights merely about ever-married adolescents' knowledge of HIV/AIDS reporting that only 12% of ever-married adolescents had comprehensive knowledge in this regard, is further evidence of the low level of knowledge among adolescents about SRH issues [9]. A low level of knowledge due to inaccurate information being unavailable is often related to negative SRH consequences. However, there was no evidence on the level of SRH-related KAP of adolescent girls in Bangladesh, and little research was conducted to assess SRH knowledge and awareness in this regard. Therefore, we aim to know the SRH-related KAP and associated influencing factors among the older adolescent girls in Chittagong district in Bangladesh, which is the basis to contribute to the improvement of KAP of adolescents in Bangladesh.

Methods

Study design and population

An institution-based cross-sectional study was conducted from June 04 to June 23, 2019. Our study population was older adolescent girls aged 16–18 years, who reached puberty at least two years preceding the survey and studying intermediate in government/autonomous or private colleges located in Chittagong district.

Sample size and sampling procedures

For a selection of the college, a probability sampling method was used from urban and rural areas, respectively. For urban participants, two colleges were randomly selected for the study from the lists of two types of colleges of Chittagong City. Similarly, for rural respondents, two colleges were taken from Satkania Upazila (sub-district) following the lottery method. Adolescent girls who attended the selected

colleges in the higher secondary classes participated in our study. Finally, 792 respondents (N = 792) were incorporated into our study. The mean age of the respondents was 16.59 years (SD = .49).

Data collection and measures

Data was collected using a structured and self-administered questionnaire in Bengali.

Seats were spaced far apart to ensure the confidentiality of the participants. Sixty adolescent girl students outside the study area were pretested using the questionnaire. After the pretest, the questionnaire was reviewed for wording appropriateness, clarity of both contents, and whether the elicited instructions are accompanied by responses.

The questionnaire included socio-demographic information of students and their parents, reproductive health-related characteristics of the study participants, and their SRH knowledge, attitude, and practice-related items. Respondents' SRH knowledge, attitude, and practice (KAP) were assessed using 30 items. Cronbach's alpha (α) was computed as a measure of reliability, which was .78 for the scale of KAP-related 30 items. The content validity of the questionnaire was reviewed by five experts who worked in the same field. All items retained in the scale were reviewed by the experts. The response options regarding KAP involved five-point Likert's scale (for the knowledge section: definitely true, probably true, not sure, definitely false, and probably false; for the attitude section: strongly agree, agree, neutral, disagree, and strongly disagree; for the practice section: always, often, sometimes, rare, and never). However, for the percentage distribution of respondents' responses regarding KAP, five scales of each section were recoded into three categories because of low frequency at the endpoint of the scale.

Data analysis

Because 32 samples (3.88%) were excluded from the analysis due to incompleteness, therefore, the final number of the participants for data analysis was 792. Descriptive statistics with the frequency and the mean with 95% confidence interval were used to describe the SRH-KAP of older adolescent girls. Multiple linear regression analyses were used to examine respondents' SRH knowledge, attitude, and practice. The confounding and multicollinearity were checked. ANOVA values for overall SRH knowledge ($F = 17.418, p < .001$), SRH attitude ($F = 16.757, p < .001$) and SRH practice ($F = 18.546, p < .001$) showed that our multiple linear regression model performed well and would be a good predictor of the main outcome variables. Variables with $P < 0.05$ were considered as statistically significant.

Results

Socio-demographic and other descriptive characteristics of older adolescent girls

Table 1 shows the socio-demographic characteristics of older adolescent girls and their parents. Of older adolescent girls, 458 (57.8%) were attending the humanities group, 229 (28.9) were from the commerce group, while 105 (13.3%) were the students of the science group. An equal number (396, 50%) of older

adolescent girls was from both urban and rural areas. Regards to religion, the majority of older adolescent girls (90.3%) were Muslim. More than three-fourth (78%) of older adolescent girls had family members of above 4. Three-fourth of the older adolescent girls acknowledged watching TV regularly, and one-fifth reported their Facebook use. The absolute majority of older adolescent girls' mothers (741, 93.6%) were housewives. More than half of older adolescent girls (58.8%) reported that their mothers watched TV regularly, whereas only 63 (8%) acknowledged their mothers' use of Facebook.

Table 1
Descriptive characteristics of older adolescent girls in the study (N=792)

Variable	Frequency(N)	Percentage (%)
Major group		
Humanities	458	57.8
Commerce	229	28.9
Science	105	13.3
Residence		
Urban	396	50.0
Rural	396	50.0
Religion		
Muslim	715	90.3
Hindu	77	9.7
Buddhist	11	1.4
Family size (persons)		
3-4	174	22.0
> 4	414	78.0
Watching TV		
Regular	597	75.6
Irregular	193	24.4
Mobile use		
Yes	203	25.6
No	589	74.4
Facebook use		
Yes	160	20.2
No	632	79.8
Father education		
Illiterate	79	10.0
Primary (1-5 grade)	231	29.2

Variable	Frequency(N)	Percentage (%)
Secondary (6–10 grade)	255	32.2
Higher secondary (11–12 grade)	117	14.8
Bachelor (12 + grade)	110	13.9
Mother education		
Illiterate	72	9.1
Primary (1–5 grade)	248	31.3
Secondary (6–10 grade)	326	41.2
Higher secondary (11–12 grade)	96	12.1
Bachelor (12 + grade)	50	5.3
Mothers' occupation		
Housewife	741	93.6
Others	51	6.4
Mothers' watching TV		
Irregular	326	41.2
Regular	466	58.8
Mothers' Facebook use		
Yes	63	8.0
No	729	92.0

Figure 1 portrays the different SRH-related characteristics of older adolescent girls reporting that more than two-thirds of them (68.6%) did not have prior knowledge of menarche or menstruation. Most of the adolescent girls (65%) acknowledged their mothers as the primary source of knowledge on SRH. Furthermore, more than two-thirds of the older adolescent girls (68%) had a regular (at least once in every month) communication regarding SRH issue.

Moreover, more than half (52%) of older adolescent girls ever read or watched SRH content on the media, while 30% ever talked with the doctor or health worker as to SRH matters. Figure 1 also demonstrates different important issues covered through SRH-related discussion with mother, sister, and other female relatives. The topics ever discussed in interpersonal communication were: family planning (53%), sexual harassment (39%), STIs (35%), and childbirth process (29%).

Older adolescent girls' SRH knowledge

Percentage distributions with a mean score of older adolescent girls' SRH Knowledge-related items were reported in Table 2. Study findings depicted that 491 (62%) older adolescent girls had accurate knowledge as to occurring physical and psychological changes in the adolescence period, 285 (36%) older adolescent girls answered correctly about the item whether menstruation is one kind of disease. Moreover, only 238 (30%) older adolescent girls had appropriate knowledge in terms of taking birth control has any adverse effect on the sexual relationship of a couple. Pertaining to the item, 'the carrier of the STIs may unintentionally transmit the virus to its partner,' 434 (54.8%) older adolescent girls had complete information. In addition, 317 (40%) of older adolescent girls responded correctly regarding whether HIV can spread through mosquito and flea, whereas 201 (25.4%) replied rightly in respect of the item whether HIV spreads from an infected person's coughing and sneezing.

Table 2
SRH knowledge-related items of older adolescent girls.

Items	Definitely True/Probably True n (%)	Not Sure n (%)	Definitely False/Probably False n (%)	Mean (95% CI)
Only physical change but no psychological change occurs during adolescence	248 (31.3)	53 (6.7)	491 (62.0)	3.65 (3.55–3.76)
Menstruation is one form of disease	442 (55.8)	65 (8.2)	285 (36.0)	2.67 (2.53–2.78)
The menstrual cycle more than once within a month is not a problem	101 (12.8)	109 (13.8)	582 (73.5)	4.20 (4.12–4.30)
A couple could risk an unwanted pregnancy if they do not follow any method of family planning	522 (65.9)	221 (27.9)	49 (6.2)	4.16 (4.08–4.24)
Taking birth control has no adverse effect on the sexual relationship of a couple	238 (30.1)	491 (62.0)	63 (8.0)	3.41 (3.34–3.49)
A birth to the conception interval of at least two years can reduce the risk of adverse maternal health	439 (55.4)	266 (33.6)	87 (11.0)	3.82 (3.73–3.91)
Unintended or unplanned pregnancy might cause for abortion	329 (41.5)	442 (55.8)	21 (2.7)	3.69 (3.62–3.76)
The carrier of the STIs may unintentionally transmit the virus to its partner	434 (54.8)	335 (42.3)	23 (2.9)	3.95 (3.87–4.02)
HIV spreads through the mosquito and flea	410 (51.8)	65 (8.2)	317 (40.0)	2.82 (2.69–2.95)
HIV does not spread the virus from an infected person's coughing and sneezing	201 (25.4)	93 (11.7)	498 (62.9)	2.24 (2.12–2.36)

Older adolescent girls' SRH attitude

Table 3 displays the percentage distributions of older adolescent girls' SRH attitude-related items with the mean point. Of older adolescent girls, 279 (35.2%) correctly disagreed with the item 'sexual education leads to more sexual activity'. Three-fourths of older adolescent girls rightly differed with the item, 'a teenage girl should not go into the kitchen during her menstrual cycle.' Besides, whether an adolescent girl can touch anyone during the menstrual period, more than three-fourth (78.7%) of older adolescent girls had an appropriate view, while more than three-fourth of students had the correct attitude relating to the item whether an adolescent girl should not go outside and college during the menstrual period. Furthermore, 615 (77.7%) older adolescent girls correctly differed with the item, 'anyone could sin if s/he adopts the birth control method'.

Table 3
SRH attitude-related items of older adolescent girls

Items	Strongly Agree/ Agree n (%)	Neutral n (%)	Strongly Disagree/ Disagree n (%)	Mean (95% CI)
Sexual education leads to more sex	252 (31.8)	261 (33.0)	279 (35.2)	3.17 (3.08– 3.27)
The school's textbook lacks sufficient knowledge concerning SRH	514 (64.9)	120 (15.2)	158 (19.9)	3.66 (3.57– 3.75)
The school teaching system is insufficient about SRH	484 (61.1)	109 (13.8)	199 (25.1)	3.54 (3.44– 3.63)
A teenage girl does not go into the kitchen during her menstrual cycle	75 (9.5)	122 (15.4)	595 (75.1)	4.29 (4.21– 4.37)
During the menstrual cycle, an adolescent girl should not touch anyone	72 (9.1)	97 (12.2)	623 (78.7)	4.39 (4.31– 4.47)
An adolescent girl during the menstrual period should not go outside and to college	109 (13.7)	74 (9.3)	609 (76.9)	4.24 (4.15– 4.33)
A woman ought not to brush her hair during her menstrual cycle	64 (8.1)	86 (10.9)	642 (81.1)	4.46 (4.38– 4.54)
An adolescent girl should not look in the mirror during her menstrual period	54 (6.8)	85 (10.7)	653 (82.4)	4.48 (4.40– 4.55)
Anyone could sin if s/he adopts the birth control method	59 (7.4)	118 (14.9)	615 (77.7)	4.35 (4.27– 4.43)
Anyone who receives STIs should cover it up	64 (8.1)	101 (12.8)	627 (79.2)	4.42 (4.33– 4.49)

Older adolescent girls' SRH practice

Percentage distributions with a mean score of older adolescent girls' SRH practice-related items were reported in Table 4. More than half of older adolescent girls never felt timid and afraid of my adolescent physical and psychological changes, while about two-thirds of the older adolescent girls reported their using cloth during menstrual periods instead of the sanitary pad. About three-fourth of the girls changed the pad or clean cloth after 5–6 hours during the menstrual period. In addition, 484 (61.1%) older adolescent girls reported that usually they felt at ease when talking about sexual and reproductive health with mothers, relatives, and friends, whereas 456 (57.6%) students felt comfortable using the phrase 'I am sick' during menstrual cycle instead of using 'I have a period.'

Table 4
SRH practice-related items of older adolescent girls

Items	Always/Often n (%)	Sometimes n (%)	Rarely/Never n (%)	Mean (95% CI)
I want to learn more new SRH details	413 (52.1)	271 (34.2)	108 (13.6)	3.74 (3.65– 3.83)
I try to keep my SRH issues secret	116 (14.6)	169 (21.3)	507 (64.0)	3.99 (3.90– 4.09)
I feel timid and afraid of my adolescent physical and psychological changes	171 (21.6)	211 (26.6)	410 (51.8)	3.57 (3.42– 3.67)
I use cloth during menstrual periods instead of the sanitary pad	309 (39.0)	186 (23.5)	297 (37.5)	2.99 (2.89– 3.12)
I keep my mother or older sister updated when I am menstruating	499 (63.0)	183 (23.1)	110 (13.9)	3.93 (3.83– 4.02)
I change the pad or clean cloth after 5–6 hours during the menstrual period	587 (74.1)	68 (8.6)	137 (17.3)	4.06 (3.96– 4.16)
I eat more nutritious food during menstrual cycles	559 (70.6)	134 (16.9)	99 (12.5)	4.05 (3.95– 4.13)
I do my daily activities during the menstruation time	625 (78.9)	118 (14.9)	49 (6.2)	4.36 (4.29– 4.44)
I feel at ease when talking about SRH	484 (61.1)	29 (37.0)	279 (35.2)	3.60 (3.47– 3.72)
Using the phrase 'I am sick' is comfortable for me during menstrual cycles	456 (57.6)	133 (16.8)	203 (25.6)	2.43 (2.32– 2.54)

Linear regression analysis reporting factors associated with SRH-related KAP

The results of the linear regression analysis depicting factors associated with older adolescent girls' SRH knowledge, attitude and practice are reported in Table 5. As it is clear that older adolescent girls' being a student of the science group ($\beta = .294, p < .001$) and reading or watching SRH issues on media ($\beta = .214, p < .001$) significantly associated with their high knowledge in this regard. Besides, older adolescent girls' being student of science group ($\beta = .169, p < .001$), urban residence ($\beta = .203, p < .001$), regular SRH communication with mother/sister/friend ($\beta = .096, p = .003$), having knowledge on the period before experiencing it ($\beta = .069, p = .040$), and reading or watching any SRH content on media ($\beta = .217, p < .001$) appeared as the predictors of positive attitude towards SRH issues. Moreover, as it is obvious that older adolescent girls' being student of science group ($\beta = .072, p = .048$), urban residence ($\beta = .219, p < .001$), mothers' regular TV watching ($\beta = .080, p = .024$), respondents' regular SRH discussion with mother/sister/friend ($\beta = .090, p = .005$), pre-knowledge on period before menarche ($\beta = .123, p < .001$), the students whose primary source of reproductive health was mother ($\beta = .082, p = .012$), reading or watching any SRH content on the media ($\beta = .180, p < .001$), and visiting and talking with the doctor or health worker on SRH issues ($\beta = .080, p = .016$) are the most important factor influencing a regular hygienic practice of SRH.

Table 5
Influencing factors of SRH-related knowledge, attitude and practice of older adolescent girls

Variable	Knowledge on SRH			Attitude toward SRH			Practice of SRH		
	β	t	p	β	t	p	β	t	p
Constant		37.93	<.001		42.66	<.001		35.87	<.001
Group (ref: science)	.29	7.99	<.001	.17	4.62	<.001	.07	1.98	.048
Area of residence (ref: urban)	.04	.94	.349	.20	4.93	<.001	.22	5.39	<.001
Watching TV (ref: regular)	.03	.92	.356	.01	.40	.692	.05	1.54	.125
Mobile use (ref: yes)	-.00	-.12	.908	.02	.49	.625	-.02	-.65	.513
Fathers' education (ref: above secondary)	.03	.84	.401	-.00	-.04	.971	.01	.19	.848
Mothers' education (ref: above secondary)	.01	.33	.743	.00	.09	.926	.04	1.08	.282
Mothers' watching TV (ref: regular)	.02	.43	.667	.02	.59	.557	.08	2.27	.024
Frequency of SRH discussion (ref: regular)	.04	1.31	.192	.10	2.95	.003	.09	2.82	.005
Knowledge on period (ref: before menarche)	.05	1.54	.123	.07	2.06	.040	.12	3.72	<.001
Source of SRH knowledge (ref: mother)	-.02	-.52	.605	-.04	-1.14	.254	.08	2.52	.012
Ever read or watched any SRH content on media (ref: yes)	.21	6.50	<.001	.22	6.54	<.001	.18	5.49	<.001
§Ever talked with doctor or health worker on SRH (ref: yes)				-.04	-1.07	.287	.08	2.42	.016
	$R^2 = .19$	$F = 17.42$	<.001	$R^2 = .21$	$F = 16.76$	<.001	$R^2 = .22$	$F = 18.55$	<.001

Note. §The variable was not included for multiple linear regression predicting the level of knowledge on reproductive health as p values were > .10 in bivariate analyses; ref: Reference.

Discussion

Our study displays that more than two-thirds of the older adolescent girls did not have prior knowledge of menstruation while experiencing menarche. This finding is consistent with others [13–14]. Traditionally, parents think that pubertal changes, including menstruation, are a natural phase of human development that should be remained a secret to adolescents before experiencing physical and psychological changes. However, adolescents may suffer from fear, depression, and anxiety after experiencing the rapid development of significant biological changes as s/he has no prior knowledge regarding SRH. For example, research showed that the number of students without prior knowledge got scared while having first menstruation was much higher ($p < .001$) than those who had prior information [15].

The present study explores that 65% of older adolescent girls considered mothers as their key informants of SRH issues. Mothers also appeared as the primary source of SRH information in some other studies [13–14, 16–18].

As it is observed, about half of the adolescent girls neither read nor watch any SRH-related content on the media. Lack of perceived importance of the adolescent girls of the rural area may result in low media exposure of SRH issues. Moreover, less than one-third of the students ever consulted with health care providers regarding the SRH problem. Inadequate health care services across the country and the tendency of concealing SRH-related problem because of the perception of taboo may contribute to this low percentage of access to health care.

This study found that more or less one-third of the older adolescent girls had inaccurate knowledge regarding puberty health. The absence of open and frequent discussion on this important topic within the family, the classroom and social network, lack of SRH health campaign and inadequate program and content of SRH on mass media due to perceived taboo of the issues lead to the restriction of a steady flow of SRH information and ignorance about adolescence health among the college-going girls. This observation was attested by our study findings, which reported a significant relationship ($p < .001$) between the variables in bivariate analysis. Furthermore, a portion of the study participants was also unaware of family planning and maternal health issues. According to social perception, whatever is the age, less or more, women are considered to be matured after their marriage. Therefore, SRH discussion is forbidden to unmarried girls, and significant numbers of female students are uninformed at their most crucial transitional phase of life [11].

Discussions on sexuality and sexually transmitted diseases are prohibited in social space in the country. Ideas about HIV/AIDS have been given in an elementary form on textbooks prescribed by educational institutions as these matters are considered as taboos. In general, ideas that have been given are HIV/AIDS could occur if anyone uses a syringe used by a HIV-infected person, use untested blood, or when a child was born by an infected mother. Most important messages, such as unsafe sexual intercourse, are often out of discussion. Besides, empirical evidence revealed that content delivery in the school education continues to remain inefficient, with teachers often skipping the chapters, or asking students to study them at home [6]. Teachers never utter the word 'sex' or avoid it while teaching in the

classroom. Because of cultural impediments, everyone has an adverse attitude towards comprehensive sex education.

Different myths are common in the rural area as regards menstruation existing religious dogma and cultural orthodox that impose some restrictions on adolescent girls and adult women as well. These restrictions prohibit adolescents from going outside even to the school, entering into the kitchen, touching any male, brushing hair, and see oneself in the mirror. Some respondents, most of them from rural areas, believe that they should follow these restrictions. In Bangladesh, the conventional practice rooted inside the conservative socio-cultural structure has taught the women that their desires, dreams, pains, aspirations, sorrows, joys can never be expressed outside the home or in public. Discussions about the menstruation process of women are thought to be a matter of shame, so the unrealistic, unscientific, superstitious thoughts of this very natural matter take root in the society to a greater extent. It creates a myth. However, our findings are supported by some studies conducted in Bangladesh, India and other countries [14–16, 18–20].

Our study findings reported that about half of the adolescent girls feel shy and timid of puberty issues; consequently, they are reluctant to reveal SRH-related problems. In our society, mothers still feel uncomfortable discussing SRH-related matters with their daughters due to traditional values and conservative attitudes. So, it is not a particular matter for female students to feel discomfort about reproductive health, whereas a very dear one like a mother feels uncomfortable to discuss regarding period. Our study depicts that 62% of adolescent girls used clean cloth during the menstrual cycle that is very unhealthy because it can cause fungal infections and urine infections. In Bangladesh, the use of sanitary napkins is a very recent trend. As a result of publishing advertisements on media, currently, the level of awareness is increasing gradually. Purchasing capacity also influences the use of a sanitary napkin. Though it is more convenient for a female student who lives in a city, the use of napkins depends on the financial well-being and availability of a student living in the village. However, irrespective of the area of residence, the average use rate of the sanitary pad is higher than the findings of many studies conducted in India [14, 18].

This study also examined the factors predicting better the KAP of SRH of the study participant. We found that being a student of science group, urban residence, regular SRH discussion, prior knowledge on SRH, mother as the source of SRH information, and ever reading or watching RH contents on the mass media and ever talking with a health professional regarding SRH Problem are the significant factors associated with the better status of SRH knowledge, attitude, and practice. Some of these factors were also supported by other studies [21–22].

Conclusion

This survey among older adolescent girls aged 16–18 has shown an overall more than an average level of sexual and reproductive health knowledge and practice and better status of attitude in this regard. However, knowledge gain, positive attitude, and regular practices are augmented by factors such as

studying science group, urban residence, regular SRH communication, and reading or watching SRH-related content on media. Although college-going study participants have already reached the late adolescence stage, their knowledge regarding menstruation and HIV/AIDS was poor, and attitude as to sexual education was inappropriate. Also, different myths and misconceptions are common among one-fifth of the adolescent girls that should be refuted. About two-thirds of the respondents used cloth instead of the sanitary pad during their menstruation cycle. Moreover, the girls usually felt comfortable expressing them as sick, whereas most of them attributed the period as a disease.

Given the context, and the substantial population of adolescents in Bangladesh, where a significant number of adolescent girls are married before the age of 18, it becomes crucial to meet the sexual and reproductive health needs and rights of this group. These needs can be met by ensuring the provision of quality and age appropriate sexuality education commencing with the very young adolescent, the delivery of quality age and gender appropriate SRH information in line with global standards, adapted to suit the present context of Bangladesh. Reproductive and menstrual health and hygiene should be more detailed and comprehensive in the school curriculum. Adolescent girls should receive counseling services at government health facilities and schools. The use of mass media could also be a successful strategy for reaching teenagers with information about puberty health, especially those living in remote and rural areas. Sanitary pads should be made available by the government to all adolescent females at a subsidized rate to make it affordable.

Limitations of the study

The study participants' information regarding their knowledge, attitude, and practice of sexual and reproductive health might have been influenced by social desirability that may affect the validity of the result. No qualitative data collection method was used, so this study could not obtain a better explanation and more in-depth insight into such a taboo topic.

Abbreviations

AIDS: Acquired immunodeficiency syndrome; ANOVA: Analysis of variance; BBS: Bangladesh Bureau of Statistics; BDHS: Bangladesh Demographic and Health Survey; BIED: BRAC Institute of Educational Development; CI: Confidence interval; HIV: Human immunodeficiency virus; KAP: Knowledge, attitude, and practice; MOHFW: Ministry of Health and Family Welfare; NIPORT: National Institute of Population Research and Training; SD: Standard deviation; SDGs: Sustainable Development Goals; SRH: Sexual and reproductive health; SPSS: Statistical package for the social sciences; STIs: Sexually transmitted infections; UNFPA: United Nations Population Fund; UNICEF: United Nations Children's Fund; VAW: Violence against Women; WHO: World Health Organization

Declarations

Acknowledgments

The authors are grateful to the students of the different colleges in Chittagong district who participated in this study, as well as the college authority for their cooperation in collecting data.

Authors' contributions

All authors were responsible for the structure of this paper. MZ and JX designed the study and drafted the manuscript. JX contributed equally to this study and shares first authorship. FK, SM and FC contributed to the study's conception and design, interpretation of the data, draft manuscript and critical revisions of the paper. The authors all approved the final versions for submission.

Funding

This work was financially supported by the Research and Publication Office of the University of Chittagong.

Availability of data and material

All of the primary data has been included in the results. Additional materials with details may be obtained from the corresponding author.

Ethics approval and consent to participate

The study protocol was reviewed and approved by the Research and Publication Office of the University of Chittagong. Ethical approval for the study was provided by Institutional Review Board for Human Subject Research, Research Centre for Public Health at Tsinghua University. Written consent was taken from the parents/LAR of participants before the data collection for this study.

Consent for publication

Not applicable.

Competing interests

All authors declare no competing interests.

References

1. World health organization (WHO). Orientation Programme on Adolescent Health for Health-Care Providers: Handout New Modules. Geneva: WHO; 2006.

2. United Nations Children's Fund (UNICEF). Adolescent Development: Perspectives and Frameworks. New York: UNICEF; 2006.
3. Bangladesh Bureau of Statistics (BBS), United Nations Children's Fund (UNICEF). Bangladesh Bangladesh Multiple Indicator Cluster Survey 2012-2013, ProgotirPathey. Dhaka: BBS & UNICEF; 2015.
4. United Nations Population Fund (UNFPA). The Impact of the Demographic Transition on Socioeconomic Development in Bangladesh: Future Prospects and Implications for Public Policy. Dhaka: UNFPA Bangladesh Country Office; 2015.
5. Bangladesh Bureau of Statistics (BBS). 2011. Population & Housing Census 2011. Dhaka: BBS; 2014.
6. Ministry of Health and Family Welfare (MOHFW). National Strategy for Adolescent Health 2017-2030. Dhaka: Ministry of Health and Family Welfare, Government of Bangladesh; 2016.
7. Ministry of Health and Family Welfare (MOHFW). Success factors for women's and children's health: Bangladesh. Dhaka: MOHFW; 2015.
<https://www.who.int/pmnch/knowledge/publications/bangladesh.pdf>
8. Presler-Marshall E, Stavropoulou M. Adolescent girls' capabilities in Bangladesh: A synopsis of the evidence. London: GAGE Programme Office; 2017.
9. National Institute of Population Research and Training (NIPORT), Mitra and Associates, ICF International. Bangladesh Demographic and Health Survey 2014. Dhaka and Rockville: NIPORT, Mitra and Associates, and ICF International; 2016.
10. Bangladesh Bureau of Statistics (BBS). Report on Violence Against Women (VAW) Survey 2011. Dhaka: BBS; 2013.
11. Ainul S, Bajracharya A, Reichenbach L, Gilles, K. Adolescents in Bangladesh: A Situation Analysis of Programmatic Approaches to Sexual and Reproductive Health Education and Services. Washington, DC & Dhaka, Bangladesh: Population Council; 2017.
12. BRAC Institute of Educational Development (BIED). Adolescents Life in Dhaka: Needs Assessment of Adolescent Girls and Boys in Bangladesh. Dhaka: BRAC University; 2012.
13. Bano R, Al Sabhan FA. Study of Knowledge and Practice of University Females Regarding Reproductive Health and Hygiene in Hail, Saudi Arabia. International Journal of Women's Health and Reproduction Sciences. 2015;3(1):31-39. <https://doi.org/10.15296/ijwhr.2015.06>
14. Hakim A, Shaheen R, Tak H. A cross sectional study on the knowledge, attitudes and practices towards menstrual cycle and its problems: a comparative study of government and non-government adolescent school girls. International Journal Of Community Medicine And Public Health. 2017;4(4):973-981. <https://doi.org/10.18203/2394-6040.ijcmph20171309>
15. Zakaria M, Xu J, Karim F, Cheng F. Reproductive health communication between mother and adolescent daughter in Bangladesh: a cross-sectional study. Reproductive health. 2019;16(1): 114. <https://doi.org/10.1186/s12978-019-0778-6>

16. Gothankar JS, Patil RS, Plkar SH. Knowledge and practices related to reproductive health amongst adolescent girls. *Medical Journal of Dr. DY Patil University*. 2015;8(6):719.
<https://doi.org/10.4103/0975-2870.169882>
17. Kumar A, Srivastava K. Cultural and social practices regarding menstruation among adolescent girls. *Social work in public health*. 2011;26(6):594-604.
<https://doi.org/10.1080/19371918.2010.525144>
18. Sapkota D, Sharma D, Pokharel HP, Budhathoki SS, Khanal VK. Knowledge and practices regarding menstruation among school going adolescents of rural Nepal. *Journal of Kathmandu medical college*. 2013;2(3):122-128. <https://doi.org/10.3126/jkmc.v2i3.9962>
19. Dube S, Sharma K. Knowledge, attitude and practice regarding reproductive health among urban and rural girls: A comparative study. *Studies on Ethno-Medicine*. 2012;6(2):85-94.
<https://doi.org/10.1080/09735070.2012.11886424>
20. Ivanova O, Rai M, Mlahagwa W, Tumuhairwe J, Bakuli A, Nyakato VN, Kemigisha E. A cross-sectional mixed-methods study of sexual and reproductive health knowledge, experiences and access to services among refugee adolescent girls in the Nakivale refugee settlement, Uganda. *Reproductive health*. 2019;16(1):35. <https://doi.org/10.1186/s12978-019-0698-5>
21. El-Gilany AH, Badawi K, El-Fedawy S. Menstrual hygiene among adolescent schoolgirls in Mansoura, Egypt. *Reproductive health matters*. 2005;13(26):147-52. [https://doi.org/10.1016/S0968-8080\(05\)26191-8](https://doi.org/10.1016/S0968-8080(05)26191-8)
22. Uddin MJ, Choudhury AM. Reproductive health awareness among adolescent girls in rural Bangladesh. *Asia Pacific Journal of Public Health*. 2008;20(2):117-28.
<https://doi.org/10.1177/1010539507311328>

Figures

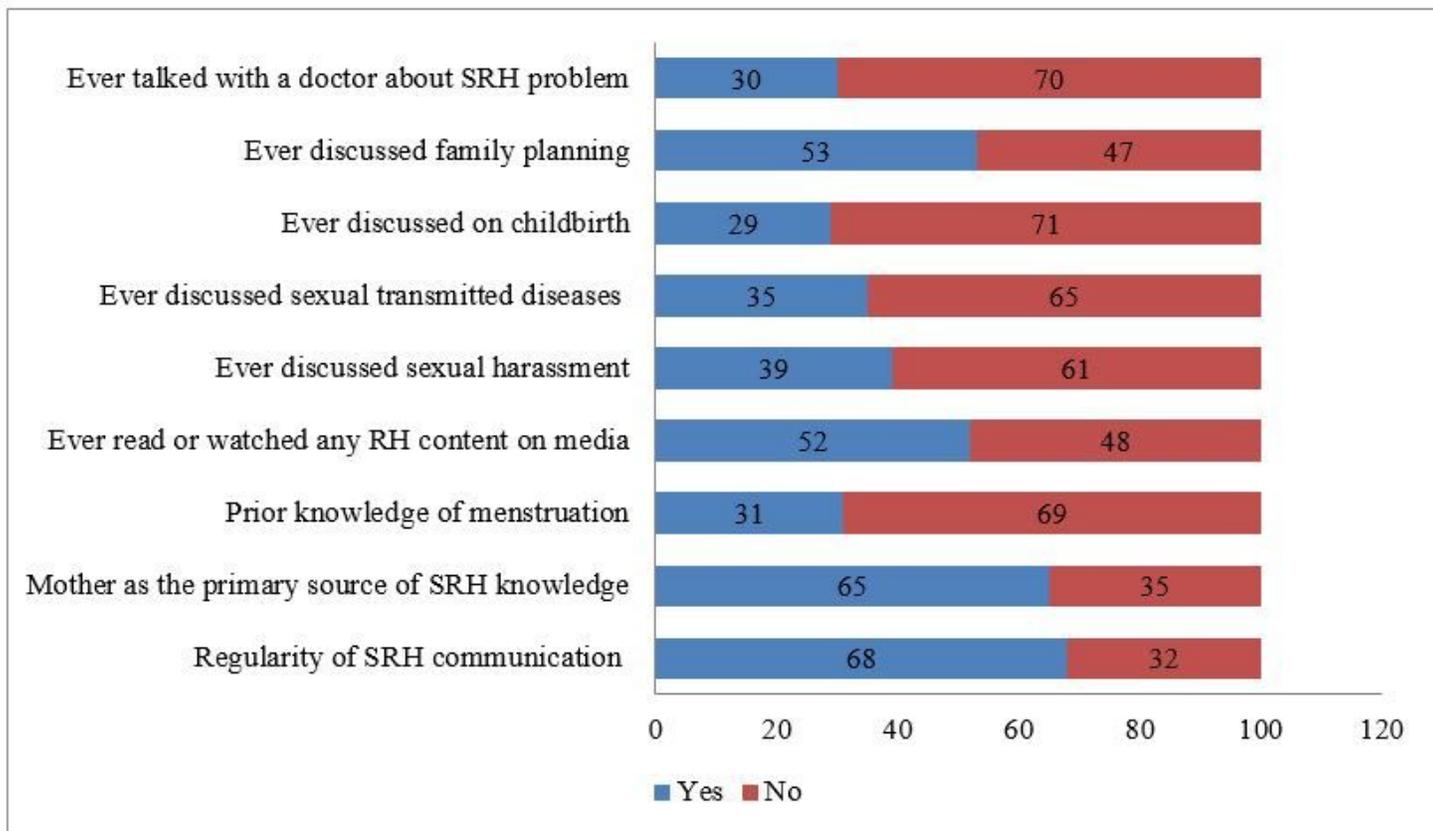


Figure 1

Percentage distribution of older adolescent girls' SRH-related characteristics.