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Assessing Sexual Education in Academic Institutions: Knowledge, Attitude and Practice among Medical and Non-Medical Students

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ABSTRACT: ***Background:*** Adolescent sexual and reproductive health (SRH) remains a critical issue in Bangladesh, where limited access to accurate information and education exacerbates risks such as unplanned pregnancies and STIs (Sexually Transmitted Infections). Comprehensive Sexuality Education (CSE) has proven to enhance understanding, attitudes, and behaviors related to SRH, yet many adolescents lack the necessary resources. This research emphasizes the urgent need for standardized sexual health education to equip both youth and healthcare professionals with essential knowledge for healthier future outcomes. ***Methods:*** This cross-sectional study involved 300 participants from Chattagram Maa O Shishu Hospital Medical College (CMOSHMC) and University of Science and Technology (USTC), of Chattogram, Bangladesh (163 medical and 137 non-medical university students), selected through convenience sampling. A structured questionnaire assessed knowledge, attitudes, and practices related to sexually transmitted Infections (STIs), sexual health, contraception, and sexual education. Data was analyzed using descriptive statistics, Chi-square tests, and independent samples t-test. Ethical approval and informed consent were obtained from respected institutions and the participants. ***Results:*** The study included 300 participants (mean age 19-26 years), with 72.7% females and 27.3% males. Most (86.7%) identified the primary purpose of sex education as preventing STDs (Sexually Transmitted Diseases), HIV (Human Immunodeficiency Virus) AIDS (acquired immunodeficiency syndrome), and promoting safe relationships. While 40.7% believed sex education should start between ages 13-15, medical students showed significantly better knowledge (P = 0.002) and attitudes (P = 0.000) than non-medical students. However, there was no significant difference in practice (P = 0.367), with most students exhibiting moderate to poor practice. ***Conclusion:*** The study highlights significant differences in knowledge and attitudes toward sex education between medical and non-medical students, with medical students demonstrating better outcomes. However, the practice of sexual health behaviors showed no significant difference between the two groups. These findings underscore the need for improved and standardized sex education across disciplines to enhance both knowledge and practice.

Keywords: Adolescent sexual and reproductive health (SRH), Sexual Education, Sexually Transmitted Infections (STIs).

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INTRODUCTION

There are 36 million teenagers in Bangladesh, accounting for 22 percent of the overall population.[1] In order to meet their basic needs, adolescents must overcome a variety of psychological and physical obstacles, especially those pertaining to sexual and reproductive health (SRH). Social networking services (SNSs) have become one of the most popular activities

among adolescents. Over the past decade, SNSs have emerged as key platforms for connecting, communicating, and socializing, as well as for building identity and expressing oneself. Adolescence is a crucial period during which individuals develop significant aspects of their sexual identity and gender.[2] Teenagers in Bangladesh continue to avoid talking about SRH, especially those who are single, and are more prone to health risks and discriminatory treatment due to a lack of resources and information SRH.[3] Schools only offer rudimentary or no SRH teaching, and parents are reluctant to bring up the subject.[4] It follows that teenage boys face social and academic limitations. Qualitative analyses showed that embarrassment, shame, and awkwardness were frequently cited as barriers to communication with both parents and providers. However, the impact of these feelings varied across contexts: embarrassment in relation to parents was linked to concerns about altering the closeness of the parent-child relationship, while embarrassment in relation to providers was tied to fears of appearing incompetent or being dismissed. Both parents and healthcare providers acknowledge the influence they have on young people's sexual well-being and express a desire to engage in conversations about sexuality with their children or patients.[5, 6] Adolescent boys turn to friends and family for advice and help in overcoming these obstacles, although doing so can be difficult because there is frequently a lack of understanding from such.[7, 8]

Adolescents are more likely to become pregnant unintentionally because of incomplete and inaccurate information, as well as the deeply ingrained conservative cultural tradition in Bangladesh. Furthermore, ignorance about HIV/AIDS and other sexually transmitted diseases (STDs) raises one's risk of contracting these illnesses.[3] Enhancing adolescents' and young people's understanding and changing their attitudes about SRH and behavior are only two of the many positive effects of sex education. As early and unwanted pregnancies, gender-based violence, sexual inequality, HIV, and other sexually transmitted infections (STIs) continue to threaten young people's sexual health and well-being, Comprehensive Sexuality Education (CSE) helps them make informed decisions about relationships, sexuality, and sexual health.[8] By delaying the initiation of sexual activity and promoting the continuous use of family planning methods, CSE enhances awareness and perspective regarding the risks associated with unwanted pregnancies.[9] Some school programs specifically aimed at increasing attachment to school or reducing dropout rates have also been effective in delaying sexual activity or lowering pregnancy rates, even when they did not directly focus on sexuality.[10] Proper knowledge of sex education is part and parcel of life to have a healthy sex life of every human being. A healthy existence and a distinct stage of physical and mental development are being laid at this crucial juncture. In this stage of development, teenagers create behavioral patterns - such as those concerning food, exercise, drug use, and sexual behavior - that either safeguard their health and the health of others around them or jeopardize their health in the long run.[11]

We usually think that sex education is a very secrete matter, not to be shared with the growing children who are the future persons seeking the correct knowledge regarding this matter. Giving adolescents the knowledge and resources they need to make mature choices about relationships and sex is far more beneficial than withholding information and urging them not to engage in sexual activity.[12] According to Iranian women in a qualitative study, benefits include improved understanding, the normalization of sexual and reproductive concerns, and self-efficacy. But there are drawbacks as well, like compromised modesty and reasons to initiate sexual activity, which the same group found concerning.[13] A study in the University of Patras revealed that although medical students knew more about sexually transmitted infections (STIs) than nursing students, both groups strongly wanted more sex education in their curricula, with 97.8% of them supporting it.[14] Similarly to this, a systematic review revealed discrepancies in sexual health education within healthcare professional curricula, pointing to a lack of standardized content and evaluation techniques that can impair students' clinical competency in this field.[15] Furthermore, cultural implications on premarital sexual behavior judgments were found in research on Turkish nursing students, highlighting the necessity for gender-specific instructional approaches.[16] Considering all the above findings from different studies, it is now time to highlight the need for thorough and uniform sexual health education in order to properly train upcoming medical professionals and university graduates.

METHODS

This cross-sectional descriptive study involved 300 participants, comprising 163 medical college students from CMOSHMC and 137 non-medical university students from USTC, selected through convenience sampling.

Inclusion Criteria:

Those who gave consent were included in this research.

Participants who were available or able to complete the study questionnaire.

Exclusion Criteria:

Individuals who were unwilling to provide informed consent.

Participants who were not available or unable to complete the study questionnaire.

Ethical consideration

The ethical clearance for the study was taken from the Institutional Review Board (IRB) before the commencement of this research.

Data collection

Data was collected by the investigators after taking the participants' consent following a brief explanation about the questionnaire during a class. Among the medical students, first to fifth year students participated in this research and among the non-medical students, first to eighth semester students participated. A structured questionnaire was used to assess participants' knowledge, attitudes, and practices regarding sexually transmitted infections (STIs), sexual health, contraception, and sexual education. The questionnaire included three sections: knowledge (correct answers), attitudes (measured using a Likert scale), and practices (behavioral questions). Data were analyzed using descriptive statistics (mean, standard deviations, and frequencies), Chi-square tests for associations, and independent samples t-test for group mean comparisons of knowledge, attitude and practice scores. Interpretation: To assess participants' knowledge, five questions were provided, with 1 point assigned for each correct answer. A score of 4-5 indicated good knowledge, a score of 3 represented moderate knowledge, and a score of 2 or less indicated poor knowledge. For assessing attitude, six questions were asked using a Likert scale: 5 (strongly agree), 4 (agree), 3 (neutral), 2 (disagree), and 1 (strongly disagree). Participants scoring between 24 and 30 had a good attitude, scores between 18 and 23 indicated a moderate attitude, and scores of 17 or lower indicated a poor attitude. Regarding practice, four questions were given, with 1 point awarded for each correct answer. A score of 1-2 indicated poor practice, 3 indicated moderate practice, and 4 indicated good practice.

RESULTS

The study included a total of 300 participants, with a mean age ranging from 19 to 26 years. The majority of participants were 21 years old (29.7%) and 22 years old (32%), with a smaller proportion in the other age groups. The sample consisted of 72.7% females (218 participants) and 27.3% males (82 participants). Regarding religious affiliation, the majority identified as Muslim (82%), followed by Hindus (15%), Buddhists (2.3%), and Christians (0.7%). In terms of academic year, 46.7% of participants were in their first year, 23.7% in their third year, 14% in their fifth year, 13% in their fourth year, and only 2.7% in their second year. Most participants were single (94.3%), with a small proportion being married (5.7%). The study population comprised 54.3% medical students from CMOSHMC and 45.7% non-medical students from USTC, as shown in Table 1.

Table 1: Socio-demographic pattern of the students

Variables	Frequency n=300	Percentage =100%
Age (in years)		
19	2	0.7
20	25	8.3
21	89	29.7
22	96	32.0
23	54	18.0
24	29	9.7
25	4	1.3

26	1	3
Gender		
Male	82	27.3
female	218	72.7
Religion		
Islam	246	82
Hinduism	45	15
Buddhism	7	2.3
Christianism	2	0.7
Marital status		
Single	283	94.3
Married	17	5.7
Institution		
CMOSHMC (Medical)	163	54.3
USTC (non-medical)	137	45.7

The study results revealed several key insights about participants' knowledge regarding sex education and sexual health. A majority (86.7%) correctly identified the primary purpose of sex education as preventing sexually transmitted diseases (STDs), HIV, and promoting safe relationships. When asked about methods to prevent STIs, 70.3% of participants correctly selected condoms, while oral contraceptive pills, intrauterine devices (IUD), and abstinence were less frequently chosen. Most participants (71.3%) correctly identified HIV/AIDS, gonorrhea, and syphilis as common STIs. Regarding the ideal age to start sex education, 40.7% believed it should begin between 13-15 years, while others favored starting at younger or older ages. The most common myth about contraception was that contraceptives lead to infertility, which was selected by 52% of participants. Overall, while many participants demonstrated a reasonable understanding of sex education and sexual health topics, there were notable misconceptions, particularly regarding contraception, as shown in Table 2.

Table 2: Knowledge of Sexual Education

Question on knowledge	**Frequency n= 300**	**Percentage (100%)**
What is the primary purpose of sex education?		
Preventing Sexually transmitted diseases and HIV	32	10.7
Preventing unintended pregnancies	0	0
Promoting safe and respectful relationships	8	2.7
All of them	260	86.7
Which of the following methods is effective in preventing sexually transmitted infections (STIs)?		
Condoms	211	70.3
Oral contraceptive pills	22	7.3
Intrauterine devices (IUD)	32	10.7
Abstinence	35	11.7
What are common sexually transmitted infections (STIs)?		
HIV/AIDS	64	21.3
Gonorrhea	15	5.0
Syphilis	7	2.3
All of them	214	71.3
At what age should sex education ideally start?		
0–12 years	71	23.7
13–15 years	122	40.7
6–18 years	74	24.7

>18 years	33	11.0
Which of the following is a common myth about contraception?		
Contraceptives lead to infertility	156	52
Condoms can reduce the risk of STIs	25	8.3
Oral contraceptive pills prevent pregnancy	29	9.7
None of them	90	30

The study on attitudes revealed diverse opinions on sex education and sexual health discussions. A significant majority (77.6%) agreed or strongly agreed that sex education should be included in the school curriculum, while 11% disagreed. Regarding the concern that comprehensive sex education promotes early sexual activity, 38% were neutral, while 25% disagreed, and 34% agreed or strongly agreed. Most participants (81%) believed it is essential for every undergraduate student to receive formal training on sexual health education. Additionally, 83.7% of respondents felt it was appropriate for physicians to discuss sexual health with adolescent patients, while only 3.3% disagreed, as shown in Table 3.

Table 3: Attitude (A) on Sexual Education

Questions on Attitude	Strongly agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)
Do you believe that sex education should be included in the school curriculum?	133 (44.3)	100 (33.3)	35 (11.7)	22 (7.3)	10 (3.3)
In your opinion, does comprehensive sex education promote early sexual activity among students?	33 (11)	69 (23)	114 (38)	75 (25)	9 (3)
Do you think it's important for every undergraduate student to have formal training on sexual health education?	118 (39.3)	125(41.7)	51 (17)	5 (1.7)	1 (0.3)
Is it appropriate for physicians to discuss sexual health issues with adolescent patients?	119 (39.7)	132 (44)	39 (13)	7 (2.3)	3 (1.0)
I am comfortable while discussing sexual health topics with peers and patients?	24 (8.0)	104 (34.7)	114 (38)	47 (15.7)	11 (3.7)
What is your attitude towards preparing yourself to address health concerns in your future medical practice?	39 (13)	79 (26.3)	119 (39.7)	48 (16)	15 (5)

A majority (71%) actively seek information on sexual health for personal or professional use, with most doing so occasionally (38.7%). When it comes to recommending contraceptive methods, only 32% have done so, with the majority (68%) not engaging in this practice. Among those who recommend contraceptives, most do so occasionally (14.7%). Regarding sexually transmitted infection (STI) screening, 36% of respondents are involved in screening. Of those who do screening, 18.3% do so frequently. Finally, while 43.7% of respondents have discussed sexual health with a patient or peer, most (56.3%) have not. Those who have discussed sexual health with a patient or peer tend to do so occasionally (23.3%), as shown in Table 4.

Table 4: Practice (P) on Sexual Education

Practice Questions on Sexual Education	Yes	No	If yes, how often?		
			Frequently	Occasionally	Rarely
Do you actively seek out information on sexual health for your own knowledge or professional practice?	213 (71)	87 (29)	71 (23.7)	116 (38.7)	26 (8.7)
Have you ever recommended contraceptive methods to a patient or peer?	96 (32)	204 (68)	35 (11.7)	44 (14.7)	17 (5.7)
Do you perform or assist in screening for sexually transmitted infections (STIs) as part of your clinical practice?	108 (36)	192 (64)	55 (18.3)	36 (12)	17 (5.7)
Have you ever discussed sexual health with a patient or peer?	131 (43.7)	169 (56.3)	43 (14.3)	70 (23.3)	18 (6)

The comparison of knowledge, attitude, and practice scores between medical and non-medical students revealed significant differences in knowledge and attitude but not in practice. For knowledge, a higher proportion of medical students (44.17%) had good knowledge, and the majority of non-medical students had moderate knowledge (40.88%) (P = 0.002). Regarding attitude, a larger percentage of medical students (34.98%) exhibited a good attitude, whereas only 13.88% of non-medical students did (P = 0.000). However, for practice, the difference was not statistically significant (P = 0.367), with 22.08% of medical students and 13.13% of non-medical students showing good practice. The majority of both groups exhibited moderate to poor practice, with 65.04% of medical students and 71.54% of non-medical students falling into the poor practice category shown in Table 5.

Table 5: The difference between the knowledge, attitude and practice scores of medical and non-medical students Total n=300

Scores	CMOSHMC n=163 (%)	USTC n=137 (%)	Chi-square	P-value
Knowledge score				
Good knowledge (4-5)	72 (44.17)	31 (22.63)		
Moderate knowledge (3)	57 (34.97)	56 (40.88)	19.096	0.002*
Poor knowledge (≤2)	34 (20.86)	50 (36.49)		
Attitude score				
Good attitude (24-30)	57 (34.98)	19 (13.88)		
Moderate attitude (18-23)	97 (59.52)	107 (78.12)	49.581	0.000*
Poor attitude (≤17)	9 (5.5)	11 (8)		
Practice score				
Good practice (4)	36 (22.08)	18 (13.13)		
Moderate practice (3)	21 (12.88)	21 (15.33)	5.421	0.367
Poor practice (≤2)	106 (65.04)	98 (71.54)		

The table 6 presents comparison of means by independent samples t-test on the knowledge score, Attitude score, and Practice score for male and female participants. For the k score, the mean is slightly higher for females (3.0505) compared to males (3.0244), though the difference is minimal. The standard deviation is slightly smaller for females (0.96110) than males (1.05381), suggesting less variability in the k score among females. For the A score, males have a marginally higher mean (21.9878) compared to females (21.8440), with males also showing greater variability, as indicated by a higher standard deviation (3.04491 for males vs. 2.83550 for females). Regarding the P score, males have a mean of 1.9268, which is slightly higher than the female mean of 1.8624. However, the standard deviations for both genders are similar, with males at 1.30318 and females at 1.39431, suggesting similar levels of variability. Overall, while there are slight differences between males and females in the scores, they are generally small, with both genders showing comparable performance across the measures.

Table 6: Comparison of Knowledge, Attitude, and Practice Scores by Gender

Gender		Knowledge Score	Attitude Score	Practice Score
Male	Frequency (N)	82	82	82
	Mean	3.0244	21.9878	1.9268
	Std. Deviation	1.05381	3.04491	1.30318
Female	Frequency (N)	218	218	218
	Mean	3.0505	21.8440	1.8624
	Std. Deviation	.96110	2.83550	1.39431
Total	Frequency (N)	300	300	300
	Mean	3.0433	21.8833	1.8800
	Std. Deviation	.98558	2.88979	1.36815

DISCUSSION

The majority of participants were young adults aged 21-22, which may reflect the early stages of higher education, limiting the ability to apply the findings to older or non-student populations. The predominance of female participants could introduce gender-based biases, especially if gender influences the study's outcomes. In research in Poland, 223 were female and 227 were male, with an age range of 16 to 19 years where the majority of respondents were 18 years old (33%), followed by 17-year-olds (31%).[17] Most participants correctly identified the primary purpose of sex education and the use of condoms in STI prevention. However, awareness of other prevention methods like oral contraceptive pills, IUDs, and abstinence was less widespread. In research by Szucs LE, the prevalence of condom use at last sexual intercourse was 54.3%, with condoms being the most common contraceptive method (43.9%), followed by birth control pills (23.3%), IUD/implant (4.8%), and shot/patch/ring (3.3%). Around 9% of participants used condoms alongside other methods like IUD, implant, or birth control pills.[18] A significant proportion also correctly identified common STIs, including HIV/AIDS, gonorrhea, and syphilis. Despite this, a prevalent myth about contraception causing infertility was widely believed by 52% of participants, highlighting the need for better education to address such misconceptions. In 2018, individuals aged 15–24 accounted for a significant proportion of reported cases of chlamydia (62%), gonorrhea (43%), and syphilis (22%). The Centers for Disease Control and Prevention (CDC) tracks over a dozen STIs, with these three being the major ones, along with HIV. If left untreated, these infections can lead to infertility, poor pregnancy and birth outcomes, and an increased risk of acquiring or transmitting other STIs, including HIV.[19-21] The study found strong support for the inclusion of sex education in school curricula, with 77.6% of participants agreeing it should be taught. While some concerns were raised about comprehensive sex education promoting early sexual activity, the majority remained neutral or disagreed. In surveys that exclusively included parents or oversampled for parents, 90.0% (with a 95% confidence interval of 86.5–93.4) expressed support for sexual health education. In contrast, among nationally representative surveys, 87.7% (with a 95% confidence interval of 85.1–90.6) of respondents showed support for sexual health education.[22]

A significant number felt that all undergraduate students should receive formal sexual health training, and 83.7% supported physicians discussing sexual health with adolescents. These results indicate broad endorsement for sex education and the involvement of healthcare professionals in sexual health conversations, highlighting a need for continued support and education in these areas. Adolescents with chronic conditions indicated a desire to discuss sexual health with their healthcare providers.[23, 24] The study revealed that while a majority seek information on sexual health, most do so occasionally. However, fewer participants engage in recommending contraceptive methods (32%) or STI screening (36%), with those who do so typically on an occasional basis. Additionally, although 43.7% have discussed sexual health with a patient or peer, a larger proportion (56.3%) have not. Physicians brought up sexual health topics 83.3% of the time. In research by Ports KA, the majority of these discussions occurred during the history-taking phase of the exam (69.7%), followed by the physical exam (22.9%) and the exam summary (7.4%).[25] These findings suggest that while there is interest in sexual health information, active engagement in providing recommendations or screenings, as well as discussions with peers or

patients, remains relatively limited. This highlights the need for increased emphasis on sexual health education and practice in both personal and professional contexts. The study found significant differences in knowledge and attitude between medical and non-medical students, with medical students demonstrating better knowledge and a more positive attitude toward sexual health. Specifically, a higher proportion of medical students had good knowledge (44.17%) and a good attitude (34.98%), compared to non-medical students (40.88% and 13.88%, respectively). However, there was no significant difference in practice between the two groups (P = 0.367), with both showing predominantly moderate to poor practice. These findings suggest that while medical students may have better theoretical understanding and attitudes toward sexual health, this does not necessarily translate into better practical application, highlighting the need for enhanced practical training in both groups.

The comparison of knowledge, attitude, and practice scores between male and female participants revealed minimal differences. Females had a slightly higher mean knowledge score (3.0505 vs. 3.0244 for males) and less variability, while males had a marginally higher attitude score (21.9878 vs. 21.8440 for females), with greater variability. For practice, males had a slightly higher mean (1.9268 vs. 1.8624 for females), but the variability between genders was similar. Overall, the differences in scores between males and females were small, indicating comparable performance across both genders in terms of knowledge, attitude, and practice.

CONCLUSION

The study highlights significant differences in knowledge and attitudes toward sex education between medical and non-medical students, with medical students demonstrating better outcomes. However, the practice of sexual health behaviors showed no significant difference between the two groups. These findings underscore the need for improved and standardized sex education across disciplines to enhance both knowledge and practice.

Limitation of the Study

This research was carried out in non-government medical college and hospital and university of Chattagram but not in government medical College Hospitals and outside Chattogram District. This research was carried out in Chattagram Maa O Shishu Hospital Medical College and University of Science and Technology but no other institutions.

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Conflict of interest: The authors declared that there is no conflict of interest.

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