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Original Research Article

Assessment of Knowledge and Attitude about Sexually Transmitted Infections among Medical Students of Dhaka City, Bangladesh

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Abstract

Background: Sexually transmitted infections (STIs) are major public health problem in both developing and developed countries. Medical students should have adequate knowledge about STI as they will be dealing with patients in future. The objective of this study was to evaluate the knowledge and attitude about STIs among medical students. ***Materials and Methods:*** This descriptive cross-sectional study was conducted among the 184 medical third year students of private medical colleges of Dhaka. Data were collected using a structured questionnaire on sociodemographic information, knowledge of STIs and attitude towards it. The response format was based on a 3-point Likert scale. Frequency distribution was calculated for statistical analysis. ***Results:*** One hundred and eighty-four students participated in this study of which 76 (41%) were males and 108 (59%) were females. All of the respondents had ever heard about STIs. Internet was the most frequently source of information for STIs. Most of the students had fair knowledge about the sign and symptoms, transmission, complication and prevention methods of STIs but there were also students who didn't knew and had misconceptions. Attitude of the students towards STIs was variable. ***Conclusion:*** This study indicates the gaps in the knowledge of medical students about STIs. Further research should be performed to investigate the reason behind this gap. Moreover, additional emphasis on the knowledge of STIs and prevention should be implemented into the curriculums.

Keywords: Sexually transmitted infections, HIV, Knowledge, Attitude.

INTRODUCTION

Sexually transmitted infections (STIs) are recognized as a major public health problem in most of the countries of the world [1]. STIs are the infections which are mainly transmitted through sexual contact [2]. More than 30 different bacteria, viruses and parasites are known to be transmitted through sexual contact [3]. The common curable STIs are gonorrhea, chancroid, syphilis, and chlamydial infections and other STIs such as HIV, genital herpes, HPV, and hepatitis B infection which cannot be cured but can be modified with the available treatments [4]. More than 1 million STIs are acquired every day. In 2020, WHO estimated 374 million new infections with one of four STIs: chlamydia (129 million), gonorrhoea (82 million), syphilis (7.1 million) and trichomoniasis (156 million) [3]. These STDs if not treated adequately, it can lead to various complications such as infertility, urethral stricture, abortions, malignancies, perinatal, and neonatal morbidities [5, 6]. With the advent of STDs for which curative therapy is not available, primary prevention has assumed greater importance. Modifying selection of sexual partners and avoiding certain sexual practices theoretically reduces the risk of infection. Both ulcerative and nonulcerative STIs enhance the transmission of HIV/AIDS [7].

Sexually transmitted diseases (STDs) affecting mostly young people in both developing and developed

countries.[1] Young individuals in the age group of 16-24 years are considered to be at more risk for STIs compared to older adults as they tend to practice unprotected sex and are likely to have multiple sexual partners [8]. The World Health Organization (WHO) estimates that 20% of persons living with HIV/AIDS are in their 20s and one out of twenty adolescents contract an STI each year [4]. The graduate students lag behind knowledge of sexual practice pattern and attitude towards prevention of STDs and condom uses [7]. In addition, they may not have access to the required information and services to avoid STIs. Furthermore, they may feel hesitant to approach the facilities where information is available [9]. In Medical curriculum, students are supposed to be more informed on this topic than another educational curriculum. However, poor awareness and knowledge indicates a problem in the educational efforts for these diseases. In addition to that, medical students are themselves in the younger age group, that is particularly vulnerable to STIs and consequent health problems [10, 11].

Previous research studies, focusing on assessing the awareness of STIs, have provided results that are varied, because of the diverse methods and targets used in the research [2, 7, 8]. Therefore, this study was designed to assess the level of the knowledge and attitude of medical students about STIs. This study will help in showing any deficiencies in the educational process of medical curriculum.

MATERIAL AND METHODS

A descriptive cross-sectional study was carried out among the 184 medical third year students of private medical colleges of Dhaka over a three months' period from January 2022 to March 2022. The questionnaire was developed and tested among 20 students, and interviewed to obtain feedback on the overall acceptability of the questionnaire in terms of length and language clarity. The participants were clearly explained about the research procedure and purpose before giving the questionnaires.

After obtaining consent a self-administered structured questionnaire was distributed. The questionnaire was designed to obtain knowledge and attitude towards STI, consisted of three sections. Section I solicited general demographic and background information. Section II had integrated six topic related questions to collect information about knowledge regarding such as disease, source, transmission, symptoms, complications of STI, section III had ten statements about their attitude regarding STI. They were approached individually and requested to complete the forms. The anonymity was maintained. Supervision was conducted by the investigator during data collection period and support was given to students at the time of difficulty.

The participant's responses for all sections other than section I was recorded using a 3-point Likert scale. Questionnaires were coded and excel sheet was created for data entry. The data were analyzed using SPSS version 20 (SPSS Inc., Chicago, IL, USA). Frequency distribution was calculated for proportion.

RESULTS

A total of 184 medical third year students, including 76 (41%) males and 108 (59%) females were enrolled in this study. On religious background, 163 (88.59%) students were Muslim, 20 (10.87%) students were Hindu and 1 (0.54%) student was Christian (Figure-1). One hundred and twenty-eight (69.57%) students were staying with their parents or family and 56 (30.43%) students were staying with their friends or alone in hostels.

All of the students had heard about STIs. Almost all the participants (98.92%) had heard about HIV/AIDS, 92.39% about gonorrhea, 89%% about syphilis, 82.06% about genital herpes, 80.98% about hepatitis B, 46.20% about trichomoniasis, However, 105 (57.06%) and 91 (49.46%) students don't know about lymphogranuloma venereum and chancroid respectively. Tuberculosis, leprosy, and candidiasis were considered as STI by 59 (32.07%), 55 (29.89%), and 76 (41.30%) students, respectively (Figure-2). When asked about the source of information about STIs, 174 (94.56%) mentioned internet followed by teachers (172, 93.48%), doctors (163, 88.59%), TV/radio (148, 80.43%), friends (147, 79.89%) newspaper/magazines (142, 77.18%), parents (28, 15%), and relatives (8, 4.35%) (Figure-3). Regarding knowledge about the route of transmission, majority of students have information about different modes of transmission. More than 90% mentioned sex with prostitutes/multiple partners/unprotected sex, 84.78% about sharing of needles and syringes, 81.52% mentioned blood transfusion and 79.89% about mother to child transmission as the routes of transmission. Misconceptions about the route of transmission of STIs were also prevailing among these students. Other factors considered by students were poor hygiene (106, 57.61%), kissing/using public toilet/pool (55, 29.89%), shaking hands 19 (10.33%), sharing towels 37 (20.11%) and mosquito bite 17 (9.24%) (Table-1). As shown in table-2 regarding awareness about symptoms of STIs among the participants, 130 (70.65%) students did not know if it was possible to have STI without symptoms. Only 45 (24.46 %) students knew that STI can be asymptomatic, and 9 (4.89%) students disagreed. 93.48% considered discharge from vagina as symptom of STIs. More than 80% of students considered urethral discharge, genital ulcer and itching over genital area as symptoms/signs. Cervical cancer, infertility and abortions were the options given to the students to assess the knowledge about the complications of STIs. Infertility was answered by 154 (83.70%) students,

cervical cancer by 149 (80.98%) and abortion by 115 (62.5%). (Table-3) Almost all of the students (97.83%) agreed condoms as a method of protection against STIs. 93.48% students mentioned that remaining faithful to single partners and counseling center help in control of STI. 90.76% of them agreed not sharing needles and syringes and 87.5% doing blood test before marriage/ child birth as prevention method (Table-4).

Regarding attitude majority of the students 172 (93.48%) agreed that sex education should be mandatory for young people. However, 7 (3.80%) students were unsure and 5 (2.72%) students disagreed about the need for sex education. Moreover, 86.96% agreed that watching/reading pornographic materials can contribute to risky sexual practice. 68.8% students felt masturbation to be harmful to health whereas 27 (14.63%) students disagreed and 31 (16.85%) participants did not know its effect on health (Table-5). One hundred and forty-nine (80.98%) participants agreed that one should wait until marriage to have sex, whereas 10 (5.43%) students thought it was okay to have premarital sex. Moreover, 25 (13.59%) students did not have any opinion about premarital sex. Twenty-five (13.73%) participants agreed about marrying a person who had sex before marriage, whereas 97 (52.72%) students were against such an idea and 62 (33.70%) students could not give any opinion about the issue. Isolating patients of STI for the safety of others was considered an appropriate measure by 93(50.54%) students; however, 64 (34.78%) students did not agree with such measures and 27 (14.67%) students did not know if it was right to do so. The idea of banning prostitution to control the spread of STIs was agreed upon by 130 (70.65%) students and disagreed by 16 (20.65%) students. Thirty-eight (20.65%) students did not know if this could help control the spread of STI. Emergency contraceptive pill was considered as a preventive measure for STI by 25 (13.59%) students, whereas 112 (60.87%) students disagreed with this measure and 47 (25.54%) students did not know if emergency contraceptive pills can prevent acquiring STI. Only 36 (19.56%) students agreed that STIs can be curable, 117 (63.59%) disagreed and 31 (16.85%) did not know whether STIs can be cured or not. Regarding HIV, 148 (80.43%) students thought HIV/AIDS cannot be cured and 22 (11.8%) students did not know if HIV can be cured or not whereas 14 (7.61%) students agreed that there was no cure for HIV at present.

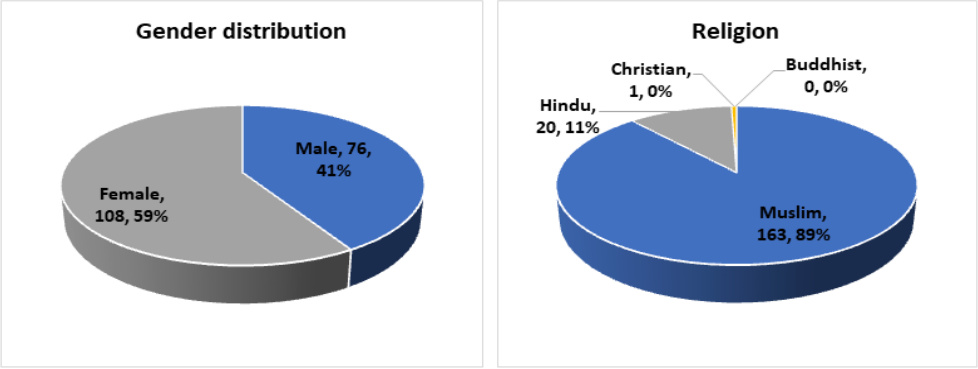
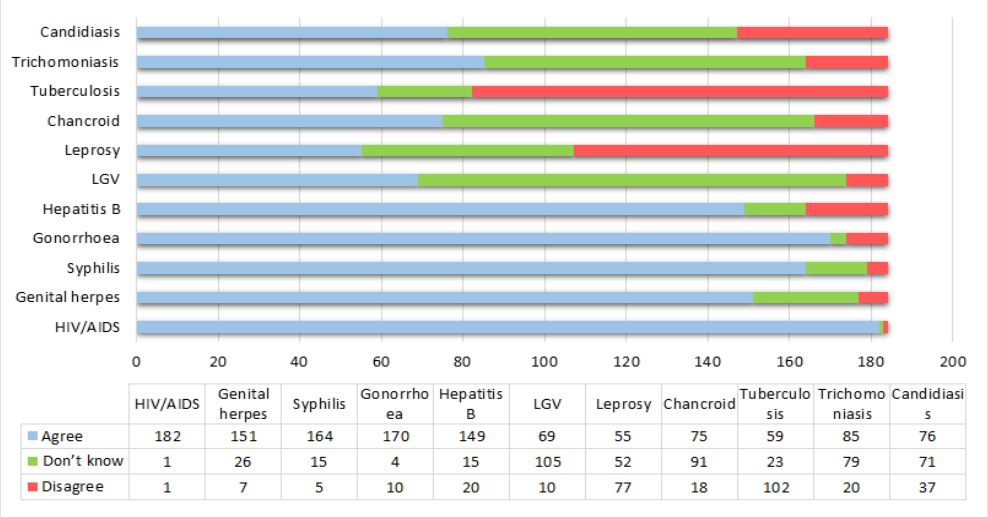
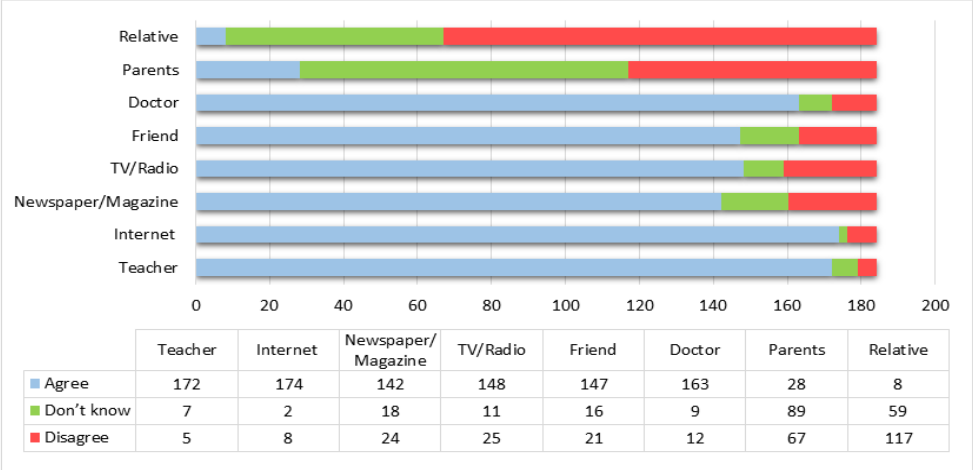


Figure-1: General demographic information: a) Gender distribution b) Religion



	HIV/AIDS	Genital herpes	Syphilis	Gonorrhoea	Hepatitis B	LGV	Leprosy	Chancroid	Tuberculosis	Trichomoniasis	Candidiasis
Agree	182	151	164	170	149	69	55	75	59	85	76
Don't know	1	26	15	4	15	105	52	91	23	79	71
Disagree	1	7	5	10	20	10	77	18	102	20	37

Figure-2: Knowledge about various STIs



	Teacher	Internet	Newspaper/ Magazine	TV/Radio	Friend	Doctor	Parents	Relative
Agree	172	174	142	148	147	163	28	8
Don't know	7	2	18	11	16	9	89	59
Disagree	5	8	24	25	21	12	67	117

Figure-3: Knowledge about source of information about STIs

Table-1: Knowledge about transmission of sexually transmitted infections

Knowledge about transmission of sexually transmitted infections	Agree	Don't know	Disagree
Sex with multiple partners	178 (96.74%)	6 (3.26%)	0
Sex with prostitutes	172 (93.48%)	9 (4.89%)	3 (1.63%)
Infected needles/drug abuse	156 (84.78%)	8 (4.35%)	20 (10.87%)
Blood transfusion	150 (81.52%)	12 (6.52%)	22 (11.95%)
Not using condom/unprotected sex	176 (95.65%)	8 (4.35%)	0
Mother to child during pregnancy	147 (79.89%)	17 (9.24%)	20 (10.87%)
Poor hygiene	106 (57.61%)	32 (17.39%)	46 (25.0%)
Kissing	55 (29.89%)	49 (26.63%)	80 (43.48%)
Using public toilets/pools	55 (29.89%)	39 (21.20%)	90 (48.91%)
Mosquito bite	17 (9.24%)	29 (15.76%)	138 (75.00%)
Shaking hands with infected person	19 (10.33%)	29 (15.76%)	136 (73.91%)
Sharing clothes/things/food	37 (20.11%)	39 (21.20%)	108 (58.69%)

Table-2: Knowledge about symptoms of sexually transmitted infections

Knowledge about symptoms of sexually transmitted infections	Agree	Don't know	Disagree
Vaginal discharge	172 (93.48%)	7 (3.80%)	5 (2.72%)
Urethral discharge	152 (82.61%)	20 (10.87%)	12 (6.52%)
Genital ulcer	154 (83.69%)	22 (11.96%)	8 (4.35%)
Itching over genital area	158 (85.87%)	23 (12.5%)	3 (1.63%)
Fever	130 (70.65%)	34 (18.48%)	20 (10.87%)
Pain while passing urine	138 (75.0%)	31 (16.85%)	15 (8.15%)
Blood in urine	92 (50.0%)	57 (30.98%)	35 (19.02%)
Abdominal pain	103 (55.98%)	42 (22.83%)	39 (21.19%)
Swelling in groin	101 (54.89%)	60 (32.61%)	23 (12.50%)

Table-3: Knowledge about complications of sexually transmitted infections

Knowledge about complications of STI	Agree	Don't know	Disagree
Cervical cancer	149 (80.98%)	20 (10.86%)	15 (8.15%)
Infertility	154 (83.70%)	14 (7.61%)	16 (8.69%)
Abortion	115 (62.5%)	55 (29.89%)	14 (7.61%)

Table-4: Knowledge about preventions of sexually transmitted infections

Knowledge about preventions of STI	Agree	Don't know	Disagree
Condoms protect against STD	180 (97.83%)	4 (2.17%)	0
Remaining faithful to single partner	172 (93.48%)	7 (3.80%)	5 (2.72%)
Doing blood test before marriage/ childbirth	161 (87.5%)	14 (7.61%)	9 (4.89%)
Counselling center help in control and prevention of STD	172 (93.48%)	9 (4.89%)	3 (1.63%)
Not sharing needle and syringe	167 (90.76%)	5 (2.72%)	12 (6.52%)

Table-5: Student attitude about sexually transmitted infections

Statement	Agree	Don't know	Disagree
Masturbation is harmful to health	126 (68.48%)	31 (16.85%)	27 (14.63%)
Watching/reading pornographic materials can contribute to risky sexual practice	160 (86.96%)	12 (6.52%)	12 (6.52%)
Sex education should be mandatory for young people	172 (93.48%)	7 (3.80%)	5 (2.72%)
One should wait until marriage to have sex	149 (80.98%)	25 (13.59%)	10 (5.43%)
Marrying a person who had sex before marriage	25 (13.73%)	62 (33.70%)	97 (52.72%)
Isolating patients of STI for the safety of others	93 (50.54%)	27 (14.67%)	64 (34.78%)
Banning prostitution to control the spread of STIs	130 (70.65%)	38 (20.65%)	16 (20.65%)
A person who does not want to become infected with STI should use emergency contraceptive pills	25 (13.59%)	47 (25.54%)	112 (60.87%)
STD are not dangerous because they can be cured	36 (19.56%)	31 (16.85%)	117 (63.59%)
HIV/AIDS can be cured	14 (7.61%)	22 (11.96%)	148 (80.43%)

DISCUSSION

Inadequate knowledge about STIs among health care professionals may cause a serious problem as they are the care provider to patients [8]. Medical students should have fair knowledge so that they won't they consider themselves to be at risk of contracting the infection while assessing the patient. This study aimed to assess the knowledge and attitude of medical students through a survey at a point in time. This provides some insight into the level of knowledge about STIs, their modes of transmission, symptoms, complication, prevention and practices relating to them among medical students in medical college.

As regards the demographic characteristics of participants in our study, there was a significantly larger number of female participants (59%), which was in accordance with the results of studies performed in Serbia (67%) Portugal (64%) and Laos (61.6%) [12-14].

Our study showed 100% of students know about STIs which is almost similar to a study where with the majority (94.16%) have heard about STIs [15]. This may be due to the information given in school and college education. Our data revealed that there are disparities in participants' knowledge on different STIs and their causative agents. The findings of knowledge gaps echoed the result from a similar study on the knowledge of STIs [16].

Our study showed that most of the students had heard about HIV/AIDS (98.92%). STIs other than HIV like syphilis, genital herpes and gonorrhoea were known by more than 80% students which is in-line with previous studies when asked if syphilis, genital herpes, and HIV were STIs, with 370 (96%), 347 (90%), and 383 (99%) participants correctly answering the question, respectively [16]. This is also in consistent with some other studies [2, 7, 17]. Nationwide awareness campaigns were launched on the dangers and nature of HIV could explain its near-perfect answers [2, 18]. High scores on syphilis and genital herpes questions could be caused by several factors, including the mention of syphilis and genital herpes in the medical curriculum. In consistent with previous studies by Misra *et al.*, and Subbarao *et al*., the least known STIs were anogenital wart, LGV, trichomoniasis and chancroid were documented in our one [2, 8]. Only 85 (46%) of the participants were able to correctly identify trichomoniasis as an STI, which is in-line with previous studies by Sekirime *et al*., and Abuabat *et al*., where 112 (28%) and 192 (50%) participants identified it as an STI respectively [7, 16]. The low level of knowledge about anogenital warts, LGV, trichomoniasis and chancroid compared to HIV and syphilis among the students could be attributed to frequent common education programs on HIV and not emphasizing the issues about other STIs [8]. Furthermore, there were students who thought tuberculosis and leprosy to be sexually transmitted. The findings are similar to some studies conducted by Subbarao *et al*., Andersson-Ellstrom and Milsom and Lal *et al*., [2, 19, 20].

Our study showed that teachers, internet, and media were the main source of information for medical students. Majority of the medical students in our study gained their knowledge about STIs from teachers (93.48%) and other doctors (88.59%). Highest number of students knew about the STIs through internet (94.56%) and many from newspaper/magazine and TV/ radio. Nowadays, plenty of information related to this particular topic is easily available via the Internet data services. This also happened to be the case with the students in Malaysia (77.3%), and medical students in Laos as well (76.6%), who gained most of their knowledge on the Internet [14, 21]. The knowledge gained by these media may not be correct and complete It may also mislead the student since not all the contents is scrutinized by qualified health professionals. Most of the times, sexual health is not discussed by parents/relatives with children as it is still considered a taboo by many people. In our study, students mentioned that parents (15.22%)/relatives (4.35%) as a source of information about STIs are very less which is similar to a study finding where 11% agreed [20].

Most of the respondents had a good knowledge about transmission. Sex with multiple partners/prostitutes, unprotected sex, blood transfusion, infection from mother to child and sharing needles and

syringes were considered as routes of transmission by most of the students (79-96%). Misra *et al*., reported the knowledge about transmission of STIs was fairly good (39-62%) [8]. However, certain misconceptions among the students in our study were transmission through sharing of cloths/things/food, cough and sneezing, sharing toilets and kissing/shaking hands with infected person which is similar to other studies [2, 7].

Regarding sign/symptoms most of the students considered vaginal discharge (93.48%), urethral discharge (82.61%) and genital ulcer (83.69%) as suspicious feature of STIs. A similar finding had been published by Abuabat *et al.,* where ulcers (96%) and genital discharge (96%) were identified by most participants as they are strongly linked to sexually transmitted infections due to their location and nature [16]. Abuabat *et al.,* also revealed in their study that 76% of the students identified cervical cancer and infertility as complication and 47% agreed for abortion/stillbirth. In concordance with this study more than 80% of the students were aware about complications of STIs like cervical cancer and infertility but only 62.5% students considered abortion/stillbirth as complication [16]. These numbers indicate inadequate knowledge base about long-term consequences for patients with STIs. Medical curriculums could have flaws when it comes to providing students with knowledge that goes beyond diagnostic skills and treatments.

In the present study, majority of the students had fair knowledge about methods of prevention. More than 90% of the students agreed use of condoms (97.83%) as a method of protection and not sharing needles and syringes (90.76%), remaining faithful to single partners (93.48%), counseling center (93.48%) help in control and prevention of STI. A study by Misra *et al*., reported similar result where the students had fair knowledge about prevention of STI [8]. All participants strongly agreed on the importance of protection against STIs. This is not surprising, since preventive measures have received considerable attention in a lot of watched content either as movies or TV shows. This high-profile attention has provided decent knowledge among students.

The attitude of the students about sexual health was variable. In our study, many medical students (68.48%) felt masturbation to be harmful to health whereas only 16.85% of students did not know about its effect on health. Previous studies on college students and paramedical students showed dissimilar results where only about 16% and 27.3% students felt masturbation to be harmful to health and another 43% and 55.5% did not know about its effect on health [2, 8]. Misra *et al*., also reported that only 26.4% students agreed that watching and reading pornography material could contribute to risky sexual practices which is in discordance with our study where most (86.96%) of the medical students agreed about it [8].

In our study, 93.48% of the students agreed about the need for sex education to be included in the curriculum. Similar finding had been reported in a study where 94.4% agreed [2]. Probably, the students felt they would have had a better knowledge if they had been educated about the issues at a younger age. In another study discordant result was found where only 45.3% agreed that sex education should be given for students in schools and college [8]. Although most of the students (80%) answered that they would wait until marriage to have sex, 5.43% of students thought it was okay to have premarital sex and 13.59% students did not give opinion study. A study by Misra *et al.,* revealed that 40.5% agreed and 46.3 didn't know about it. Almost 13% students agreed about marrying a person who had sex before marriage. As mentioned in earlier studies, staying away from families and mingling with people from different sociocultural background during higher education may change their attitude toward premarital sex [20, 22]. This may be also due to abundant availability of the internet and reality television has a corrupting influence on the people all over the world in general. The impact of the technological advancement may be more on school and college students [23].

Our study revealed that 13.59% students agreed that use of emergency contraceptive pills could prevent STIs, while 25.54% students had no idea about it. Misra *et al.,* and Subbarao *et al.,* reported 23.8% and 34% students respectively thought use of emergency contraceptive pills could prevent STIs which is higher than our study. This may be due to many of them still had misconceptions about the prevention of spread of STIs, although most of the students knew about the mode of spread of STIs [2, 8]. This point has not been discussed much in earlier studies [15, 24]. Furthermore, when asked about prevention and containment of STI, more than 50% of the participants felt isolation of patient with STI and banning prostitution as an option to prevent spread of STI which is similar to the reporting (50.5%) of Subbarao *et al.,* [2] Most of the students (80.43%) knew that there was no cure for HIV/AIDS, 7.61% thought HIV infection can be cured, and 11.96% did not know if it can be cured. Subbarao *et al.,* also reported that only 30% of the students knew that there was no cure for HIV/AIDS most importantly, 31.4% thought HIV infection can be cured, and 30% did not know if it can be cured which is not consistent with our study finding [2]. The findings of our study became difficult to compare as on review of literature, not many studies have been done on medical students to assess the knowledge and attitude about STIs in other countries as well as ours. The studies which have been done earlier are mainly among non-medical profession.

LIMITATION

Since the questions of the study was focused on sensitive issue the respondent might not give genuine information even if confidentiality was assured which became the limitation of the study. Thus, it could affect the reliability of the information in this study.

CONCLUSION

Our study group though had fair knowledge about the STIs, did not have enough information as medical student and right attitude towards these infections. This issue is one of the largest public health concerns worldwide and should be presented to medical students early in order to fully comprehend the extent of the problem. Thus, organizing training sessions on STIs at regular intervals and conducting awareness raising educational events in the form of lectures and quiz programs will promote a good delivery of correct information to medical students. It is important because they will be dealing with the patients of STIs in future as doctor. Orientating the students about STIs will go a long way in prevention and control of STIs. Furthermore, the morbidities and complications associated with STIs can be prevented.

Conflict of Interest: The authors declare that there is no conflict of interests regarding the publication of this article.

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REFERENCE

1. Demis, A., Adera, A., & Workeneh, D. (2017). Determination of knowledge, attitudes and practices on prevention of sexually transmitted infections among seto semero high school students. *MOJ Public Health*, *5*(5), 142-153.
2. Subbarao, N. T., & Akhilesh, A. (2017). Knowledge and attitude about sexually transmitted infections other than HIV among college students. *Indian journal of sexually transmitted diseases and AIDS*, *38*(1), 10.
3. Sexually transmitted infections (STIs), WHO fact sheet 2021. Available at: https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis). [Accessed on 10.04.22]
4. Olasode, O. A. (2007). Sexual behaviour in adolescents and young people attending a sexually transmitted disease clinic, Ile Ife, Nigeria. *Indian journal of sexually Transmitted Diseases and AIDS*, *28*(2), 83.
5. World Health Organization. Global Strategy for the Prevention and Control of Sexually Transmitted Infections: 2006-2015: Breaking the Chain of Transmission. Geneva: World Health Organization; 2006-2015. Available at: https://apps.who.int/iris/handle/10665/43853 [Accessed on 10.04.22]
6. De Waure, C., Mannocci, A., Cadeddu, C., Gualano, M. R., Chiaradia, G., Vincitorio, D., ... & Ricciardi, W. (2015). Knowledge, attitudes and behaviour about sexually transmitted Infections: a survey among Italian university female students. *Epidemiol Biostat Public Health*, 12, 1-10.
7. Sekirime, W. K., Tamale, J., Lule, J. C., & Wabwire-Mangen, F. (2001). Knowledge, attitude and practice about sexually transmitted diseases among university students in Kampala. *African health sciences*, *1*(1), 16-22.
8. Misra, S. K., Oudeacoumar, P., & Indradevi, R. (2019). Knowledge and attitude about sexually transmitted infections among paramedical 1st year students in a tertiary care teaching institute in Pondicherry. *Int J Res Dermatol*, 5(3), 532-536.
9. Arya, O. P., & Bennett, F. J. (1968). Attitudes of college students in East Africa to sexual activity and venereal disease. *British Journal of Venereal Diseases*, *44*(2), 160-166.
10. Fageeh, W. M. (2008). Awareness of sexually transmitted diseases among adolescents in Saudi Arabia. *Medical Science*, *15*(1), 77–90.
11. Farih, M., Khan, K., Freeth, D., & Meads, C. (2014). Protocol study: sexual and reproductive health knowledge, information-seeking behaviour and attitudes among Saudi women: a questionnaire survey of university students. *Reproductive health*, *11*(1), 1-5.
12. Subotic, S., Vukomanovic, V., Djukic, S., Radevic, S., Radovanovic, S., Radulovic, D., ... & Vukomanovic, I. S. (2021). Differences Regarding Knowledge of Sexually Transmitted Infections, Sexual Habits, and Behavior Between University Students of Medical and Nonmedical Professions in Serbia. *Frontiers in Public Health*, *9*.
13. Santos, M. J., Ferreira, E., & Ferreira, M. (2016). Knowledge of and attitudes toward sexual and reproductive health among college students. *Atención Primaria*, *48*, 188-194.
14. Wongkongdech, R., Chanthamath, S., & Wongkongdech, A. (2020). Knowledge, attitude and prevention behavior related to HIV/AIDS among students of a college in Lao-PDR: a cross-sectional study. *F1000Research*, *9*(181), 181.
15. Gupta, S., Khanal, T. R., Gupta, N., Thakur, A., Khatri, R., Suwal, A., & Seomangal, K. (2011). Knowledge, behavior and attitude towards sexually transmitted infections and acquired immunodeficiency syndrome of adolescent students. *Journal of Nepal Health Research Council*, *9*(1), 44-47.
16. Abuabat, A., Alfarhan, A., Alahmari, R., Alanazi, W., AlJaafary, A., Agha, S., ... & Masud, N. (2020). Knowledge and attitudes of sexually transmitted infections among medical students in

Riyadh, Saudi Arabia. *Int J Med Dev Ctries*, 4(6), 981-988.

17. Uike, P. S., Dudhgaonkar, S., & Jagdhani, R. S. (2016). Assessment of awareness, perception and attitude about sexually transmitted diseases (STDs) among medical undergraduates in tertiary care teaching institute of Vidarbha region in Maharashtra state. *International Journal of Biomedical Research*, *7*(7), 541-545.
18. Alwafi, H. A., Meer, A. M., Shabkah, A., Mehdawi, F. S., El-Haddad, H., Bahabri, N., & Almoallim, H. (2018). Knowledge and attitudes toward HIV/AIDS among the general population of Jeddah, Saudi Arabia. *Journal of infection and public health*, *11*(1), 80-84.
19. Andersson-Ellström, A., & Milsom, I. (2002). Knowledge about the prevention of sexually transmitted diseases: a longitudinal study of young women from 16–23 years of age. *Sexually transmitted infections*, *78*(5), 339-341.
20. Lal, S. S., Vasan, R. S., Sarma, P. S., & Thankappan, K. R. (2000). Knowledge and attitude of college students in Kerala towards HIV/AIDS, sexually transmitted diseases and sexuality. *National Medical Journal of India*, *13*(5), 231-236.
21. Folasayo, A. T., Oluwasegun, A. J., Samsudin, S., Saudi, S. N. S., Osman, M., & Hamat, R. A. (2017). Assessing the knowledge level, attitudes, risky behaviors and preventive practices on sexually transmitted diseases among university students as future healthcare providers in the central zone of Malaysia: a cross-sectional study. *International journal of environmental research and public health*, *14*(2), 159.
22. Amu, E. O., & Adegun, P. T. (2015). Awareness and knowledge of sexually transmitted infections among secondary school adolescents in Ado Ekiti, South Western Nigeria. *Journal of sexually transmitted diseases*, *2015*, 260126.
23. Doshi, P., Dovina, D. T., & Sasikala, S. (2013). Attitude towards premarital sex among college students. *Indian Journal of Health and Wellbeing*, *4*(8), 1563.
24. Jaiswal, S., Magar, B. S., Thakali, K., Pradhan, A., & Gurubacharya, D. L. (2005). HIV/AIDS and STI related knowledge, attitude and practice among high school students in Kathmandu valley. *Kathmandu University medical journal (KUMJ)*, *3*(1), 69-75.