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Original Research Article

Assessing and improving the knowledge of sexually transmitted infections among freshers in the selected universities, Magway

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ABSTRACT

Background: To alleviate the public burden of sexually transmitted infections (STIs), one of the effective strategies is to improve the knowledge and awareness of STIs, especially among high-risk populations. This study aimed to assess the baseline knowledge score on STIs among freshers and to evaluate the effectiveness of a health education program on STIs.
Methods: A cross-sectional comparative study, incorporating pre-test and post-test design with a health education program, was conducted using a self-administered questionnaire among 110 freshers from medical-related university and 110 from non-medical university in Magway in 2023. Data analysis was done by R.
Results: Regarding the types of STIs, almost all (217, 97.7%) of the freshers identified AIDS as STI followed by syphilis (131, 59.5%) and gonorrhea (83, 37.7%). Concerning the modes of transmission, nearly all (216, 98.2%) identified sexual contact. About 39 (17%) of the freshers stated that they did not know the signs of STIs whereas 11, 5% were unaware of the complications. For the prevention of STIs, many students (208, 94.5%) stated the use of condoms. A statistically significant difference in baseline STIs knowledge scores was observed between the medical-related (25.1±5.9) and non-medical university (21.2±5.7) students ($p<0.001$), as well as between males (24.2±6.0) and females (21.5±5.7) ($p<0.001$). Following the health education session, there was a significant mean improvement of 14.4 points in post-test score ($p<0.001$).
Conclusions: This data highlighted the need for health education programs on STIs among university students.

Keywords: Knowledge, STI, Students

INTRODUCTION

Sexually transmitted infections are infections transmitted through sexual contact. STIs pose a significant public health problem in both developing and developed countries. Globally, more than one million STIs are acquired each day, and it is estimated that 374 million new STIs occur each year.[1] The majority of STIs are asymptomatic and can be transmitted by individuals who appear perfectly healthy, often unaware that they are infected, leading to be late diagnosis and bad consequences. STIs have a direct impact on sexual and reproductive health, leading to stigmatization, infertility, and an increased risk of HIV, genital cancer, and pregnancy complications. Mother-to-child transmission of sexually transmitted infections (STIs) is associated with serious adverse outcomes, including stillbirth, neonatal death, prematurity, low birth weight, sepsis, neonatal conjunctivitis, and congenital anomalies. Additionally, they can impose a financial burden on both households and the national health system, with adverse effects on the overall well-being and quality of life of patients.

There are high-risk groups of acquiring STIs including sexual workers, Men who have sex with men (MSM), and drug users. Adolescents (10-19 years) are the high-risk age group for acquiring STIs because they have limited health knowledge, and want to explore new things including sexual experience. A survey that analyzed the trends and differences in STIs by geographical regions and age groups from 1990 to 2019 stated that the population with the greatest incidence of syphilis tended to be younger globally (25-29 years in 2010 versus 20-24 years in 2019).[2]

This indicates the need for health education on STIs among the younger population. To reduce the public burden of STIs, one of the effective strategies is to improve the knowledge and awareness of STIs, especially in high-risk populations. Freshers (first year university students) are in the age of late adolescence, which is the transition period from guardian supervision to independent living. During this period, individuals seek to explore the world, and acquire new knowledge and experience, which can increase health related risk, including the risk of contracting sexually transmitted infections (STIs). The previous studies stated that knowledge on STI among university students were inadequate. A study conducted among polytechnic college students in Southwest Ethiopia found that only about 40% possessed adequate knowledge of sexually transmitted infections (STIs).[3] The study of university students in Bhutan reported about 53% had good knowledge on STIs.[4] A study among Romanian medical students reported that university students frequently demonstrate insufficient knowledge regarding sexually transmitted infections (STIs), highlighting the need for targeted sexual health education program.[5] The health education program can improve the knowledge on STIs. A school-based intervention study reported significant increases in high school students' knowledge of HIV/STIs and condom use immediately after the program, regardless of whether it was delivered by classroom teachers or school nurses.[6]

This study aimed to identify the knowledge related to STIs and assess the effectiveness of health education programs in improving the knowledge of STIs among university freshers in Magway. Through evaluating the baseline health knowledge on STIs, the adequacy of health knowledge and necessity of health education programs on STIs can be assessed. Furthermore, conducting pre-test and post-test assessments of health education programs would be valuable in developing effective health education initiatives, and informing future prevention and control programs for STIs in Myanmar.

METHODS

A cross-sectional comparative study with pre-test and post-test design was conducted in October, 2023, integrated with the health education program. One medical-related university and one non-medical university were purposively selected. The sampling frame included all freshers (first year university students) attending these universities at the time of study. A total of 116 first-year freshers from each university (total 232 university freshers) was recruited. The recruited freshers were provided with pre-tested self-administered questionnaire and baseline knowledge scores were collected.

The questionnaire comprised three sections. The first section focused on the background characteristics of the study population, including age, sex, race and religion, marital status, place of residence, and current living status. The second section addressed the knowledge about STIs, covering types of STIs, modes of transmission, high-risk people, signs and complications, methods of STIs prevention, and measures for preventing mother-to-child transmission. The third section concerned with the source of information, adequacy, and necessity of the health knowledge.

Then, the health talk on STIs was provided for all freshers from the two study areas. The health talk was provided by the expert medical officer, using PowerPoint presentation lasting about 20-30 minutes. Following the talk, the reassessment of the knowledge related to STIs was carried out among the same participants using the same self-administered questionnaire. The study achieved a non-response rate of 5.2%, resulting in a final sample size of 220 freshers, with 110 participants from each university.

Data were systematically collected and checked for completeness, errors and inconsistencies. Data analysis was done by R.[7,8] Categorical variables were described in frequency. The knowledge score was calculated as score '1' for the correct answer and '0' for the incorrect or don't know answer. The total knowledge score for each group was described in mean and standard deviation.

The baseline knowledge score between two independent groups was compared by an independent two-sample t-test. Subsequently, the change between the pre-test and post-test knowledge scores was calculated by paired t-test. A p value of less than 0.05 was considered significant in this study.

RESULTS

A total of 220 freshers (110 from medical-related university and 110 from non-medical university) were involved in this comparative study.

The mean age of the students was 18.5±0.8 years, in the range of 17 and 21. Nearly 60 percent of the students were male. Most of the students were single (99%), with rural urban ratio of 0.8:1. More than 80% of students were currently not living with their parents and among them nearly eighty percent lived in a hostel.

Table 1: Knowledge on STIs among freshers from the two universities (n=220).

Knowledge on STIs	Medical related university	Non-medical university	All fresher
	Frequency (%)	Frequency (%)	Frequency (%)
Types of STIs (correct knowledge)			
AIDS	105 (95.5)	110 (100)	217 (97.7)
Syphilis	67 (60.9)	64 (58.2)	131 (59.5)
Gonorrhoea	54 (49.1)	29 (26.4)	83 (37.7)
Bacterial vaginosis	38 (34.5)	24 (21.8)	62 (28.2)
Hepatitis B	20 (18.2)	11 (10.0)	31 (14.1)
Genital herpes	9 (8.2)	5 (4.5)	14 (6.4)
Chancer	4 (3.6)	4 (3.6)	8 (3.6)
Types of STIs (misconception)			
Malaria	2 (1.8)	1 (0.9)	3 (1.4)
UTI	68 (61.8)	66 (60.0)	134 (60.9)
MOT of STIs (correct knowledge)			
Unsafe sex	108 (98.2)	108 (98.2)	216 (98.2)
Sharing needles and syringes	86 (78.2)	53 (75.5)	169 (76.8)
Blood transfusion	76 (69.1)	84 (76.4)	160 (72.7)
Mother to child transmission	77 (70.0)	65 (59.1)	142 (64.5)
Sharing razors	70 (63.6)	62 (56.4)	132 (60.0)
MOT of STIs(misconception)			
Working together	8 (7.3)	6 (5.5)	14 (6.4)
Eating together	23 (20.9)	12 (10.9)	35 (15.9)
Mosquito bite	12 (10.9)	4 (3.6)	16 (7.3)
Signs of STIs			
Asymptomatic	29 (26.4)	24 (21.8)	53 (24.1)
Lower abdominal pain	55 (50.0)	33 (30.0)	88 (40.0)
Dysuria	45 (40.9)	23 (20.9)	68 (30.9)
White discharge	56 (50.9)	45 (40.9)	101 (45.9)
Genital ulcer	61 (55.5)	47 (42.7)	108 (49.1)
Scrotal swelling	35 (31.8)	18 (16.4)	53 (24.1)
Inguinal bubo	13 (11.8)	5 (4.5)	18 (8.2)
Complications of STIs			
HIV infection	101 (91.8)	96 (87.3)	197 (89.5)
Genital malignancy	90 (81.8)	67 (60.9)	157 (71.4)
Infertility	59 (53.6)	30 (27.3)	89 (40.5)
Abortion	41 (37.3)	21 (19.1)	62 (28.2)
Pelvic inflammatory disease	4 (3.6)	2 (1.8)	6 (2.7)
Prevention of STIs			
Use of condom	106 (96.4)	102 (92.7)	208 (94.5)
Avoid multiple sex partners	97 (88.2)	80 (72.7)	177 (80.5)
Screening before blood transfusion	80 (72.7)	74 (67.3)	154 (70.0)
Prevention of mother to child transmission	62 (56.4)	48 (43.6)	110 (50.0)
Use of single use syringes and needles	54 (49.1)	44 (40.0)	98 (44.5)
Prevention of mother to child transmission			
Giving ARV to pregnant women	82 (74.5)	68 (61.8)	150 (68.2)
Elective cesarian section	61 (55.5)	43 (39.1)	104 (47.3)
Giving ARV to newborn	45 (40.9)	35 (31.8)	80 (36.4)
Exclusive breastfeeding	23 (20.9)	13 (11.8)	36 (16.4)

STIs: Sexually transmitted infections; UTI: Urinary tract infection; AIDS: Acquired immunodeficiency syndrome; MOT: Mode of transmission; HIV: Human immunodeficiency virus; ARV: Antiretroviral drug.

On initial assessment, all the participants had heard of STIs but about 10% did not think that everyone is at risk of STIs. Concerning types of STI, almost all (97%) were aware of HIV/AIDS while about 60% had misconception about UTI as STIs (Table 1). Regarding the mode of transmission, nearly all (98.2%) knew about sexual

intercourse followed by sharing needles and syringes (76.8%), blood transfusion (72.7%) and mother-to-child transmission (64.5%). However, some participants held misconceptions about STI transmission, including the belief that eating with HIV-positive individuals (16%), being bitten by mosquitoes (8%), and working with HIV-positive individuals (6%) could lead to transmission of STIs (Table 1).

During the pre-assessment, approximately 17% of the respondents showed a lack of awareness regarding the signs of STIs, while 5% were unaware of the complications of STIs. The assessment of knowledge regarding the signs and complications of STIs is presented in Table 1. On assessing the preventive measures, only a single student did not know the preventive measures of STIs where 36 students (16.4%) were unaware of the preventive measures for mother-to-child transmission.

Table 2: Comparison of socio-demographic characteristics and baseline knowledge score (n=220).

Background characteristics	N	Baseline knowledge score Mean±SD	P value	95% CI for mean difference	
Age group (in years)					
<18	7	26.0±5.4	0.2064	-2.07	7.9
≥18	213	23.1±6.1	-	-	-
Sex					
Male	130	24.4±6.0	<0.001*	1.31	4.48
Female	90	21.5±5.7	-	-	-
University					
Medical related university	110	25.1±5.9	<0.001*	2.38	5.45
Non-medical university	110	21.2±5.7	-	-	-
Permanent residence					
Rural	95	23.8±5.2	0.195	-0.54	2.62
Urban	125	22.7±6.7	-	-	-

*Significant.

Table 3: Comparison of pre-test and post-test score by sex (n=220).

Sex	N	Pretest score		Posttest score		Mean diff	P value
		Mean	SD	Mean	SD		
Male	110	24.2	6	37.2	4.2	12.9	<0.001*
Female	110	21.5	5.7	38.4	4.3	16.9	<0.001*
All freshers	220	22.9	6.1	37.4	4.2	14.4	<0.001*

*Significant

Table 4: Comparison of pre-test and post-test score by university (n=220).

University	N	Pretest score		Posttest score		Mean diff	P value
		Mean	SD	Mean	SD		
Medical related university	110	25.1	5.9	36.7	4.5	11.8	<0.001*
Non-medical university	110	21.2	5.7	38.1	3.7	17.7	<0.001*
All freshers	220	22.9	6.1	37.4	4.2	14.4	<0.001*

*Significant

The overall mean score for baseline knowledge was 23.2±6.1 ranging from 8 to 27. The baseline knowledge score of females was significantly higher than that of male (p<0.001). There was a statistically significant difference in baseline STIs knowledge score between medical-related university (25.1±5.9) and non-medical university (21.2±5.7) (p<0.001) (Table 2). After the health education session, the mean post-test score was 37.7±4.3.

Overall, there was a mean improvement of 14.4 points in their post-test score compared to pre-test score (p<0.001). Subgroup analysis revealed that the mean differences was higher in female compared to male (16.9 versus 12.9) (Table 3).

The pretest and post-test score for medical-related university were 24.6 (SD=6.1) and 36.7 (SD=4.5) with mean improvement of 11.8 points (p<0.001). For non-medical university, the mean pre-test and post-test score

were 21.3 (SD=5.7) and 38.1 (SD=3.7) with mean improvement of 17.7 points (p<0.001) (Table 4).

Concerning the sources of information, more than 80% stated as internet/online followed by health care personnels (74.5%), mass media (TV/radio/newspaper) (70.5%) and teachers (32.3%). Nearly three-fourths (73%) of freshers thought that they did not have enough knowledge on STIs. Almost all (97%) stated that they want to get more knowledge on STIs.

DISCUSSION

This study aimed to assess the baseline knowledge related to STIs and evaluate the effectiveness of health education programs in improving the knowledge on sexually transmitted infections (STIs) among university freshers in Magway. On baseline assessment of 220 freshers, every fresher knew at least one type of STIs. The most common type of STI described was AIDS, like most of the previous studies.[9] However, other common STIs in Myanmar were not known by most participants. There was also a significant number of misconceptions on type of STIs. Most of the respondents demonstrated good knowledge about the modes of transmission and prevention of STIs.

Almost all freshers knew the common mode of transmission of STIs: unsafe sex, sharing of syringes and needles. However, the proportion of those who knew about blood transfusion and mother-to-child transmission was still low. There were also misconceptions about the modes of transmission of STIs such as eating together, mosquito bite, and working together. The similar finding was observed in the study by Vasudev, which stated misconception such as kissing (31%), sharing towels (22%), sharing toilet (20%) and mosquito bite (15%).[10] The low awareness on prevention of mother to child transmission was also noted in the current study. The study among Ethiopian college students also indicated limited awareness regarding specific modes of STI transmission, including blood transfusion (16.8%), sharing contaminated materials (12.1%), and breastfeeding (7.7%).[3] Health education programs should emphasize on clarifying the modes of transmission of sexually transmitted infections (STIs) in order to address and correct common misconceptions.

Only about half of the respondents knew the signs of STIs. The similar findings were detected in a study conducted in India, where only about 40% of the students knew about the symptoms of STIs.[11] The literature review reveals similar findings in many other studies conducted at different geographic locations.

At baseline, the mean knowledge score was significantly higher among male participants compared to females. The study by Nigussie found that higher proportion of male had good knowledge compared to female.[3] The results indicate that female students had comparatively lower knowledge scores, highlighting the need for greater emphasis on female-focused health education program. Similarly, the knowledge score of medical-related freshers was significantly higher than their non-medical counterpart (p<0.000). This finding was similar to the study conducted in Serbia, which observed a statistically significant difference (p<0.001) in knowledge score between the two groups.[10] Students from medical universities, who are introduced to health-related subjects even in their first year, showed higher baseline knowledge. This suggests that health education efforts should place particular focus on non-medical universities, where students often have limited prior exposure to such topics and therefore require more intensive awareness raising activities.

According to the study conducted by Ekşi, only 16% of the first-year students were found to have inadequate education about sexually transmitted diseases (STDs). However, a total of 66.1% of the students stated that they want to be informed at university about sexually transmitted diseases.[12] In this research, more than 70% thought that they lacked enough knowledge on STIs, while nearly all expressed a strong desire to acquire additional knowledge about STIs.

Reassessing the post-test score after health education session found a significant mean improvement of 14.4 points (p<0.000) in knowledge score regardless of the universities. The finding was significantly higher than those in a study conducted among high school students, which showed a mean improvement of 1.85.[13] This may be attributed to the higher engagement in sexual activity among university students, indicating a greater interest in receiving health education regarding sexually transmitted infections.

This study highlighted that the primary source of information related to STIs was internet/social media. This is different from the findings of the previous study, which indicated that health care personals or teachers were the most frequently cited sources of information about STIs.[3,14] Due to the COVID-19 pandemic, individuals had to adhere to preventive measures including social distancing and many became familiar with work-from-home practice. Reduced physical interaction among people resulted in more time being spent on social media and the use of social media is a growing trend, particularly among the younger population. The significance of social media usage can be applied in health education and health promotion programs.

There are some limitations of the study. The post-test was performed immediately after the health education sessions and therefore, the increase in knowledge score can be overestimated. The long term knowledge retention was not assessed in this study. This study only collects knowledge data and data on attitude and practice are not included. Due to the self-administered questionnaire,

some data are incomplete with the non-response rate of 5.2%. The sample size was just enough for the study.

CONCLUSION

This cross-sectional comparative study with the health education program was conducted at the University of Community Health, as a medical related university and Technical University, Magway as non-medical university to assess the baseline knowledge level on sexually transmitted infections among freshers and detect the effectiveness of the health education program. According to this study, the baseline knowledge score was significantly increased among medical-related university freshers compared to non-medical freshers (p value <0.000). After the health education talk, the knowledge score was significantly improved in both universities, while the mean difference of non-medical freshers is significantly higher than that of medical-related freshers (p value <0.000). According to this data, non-medical university freshers have less knowledge of sexually transmitted infections, however, they are more interested in attaining health knowledge compared to medical-related freshers. Almost all freshers from both universities stated that they want more knowledge on sexually transmitted infections. This data indicated the requirement of health education programs among university students. By promoting the health education program in the university curriculum, the health knowledge level of adolescent could be improved, leading to positive change in attitude and practice of their reproductive life and reducing the occurrence of sexually transmitted infections and other complications.

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