Original Article

Educational Intervention on Pulmonary Tuberculosis among Rural Secondary School Students

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ABSTRACT:

Background: *Tuberculosis is an infectious and communicable disease. It is one of the world's most widespread and deadly illnesses. It is caused by bacilli called Mycobacterium tuberculosis. The bacillus spreads by droplet infection and primarily involves lungs. Bangladesh is a high-burden country in the list of world health organization. Tuberculosis is a preventable and curable disease and knowledge about the disease may contribute a lot in both respects. Health education is an important part of TB control program. This study was undertaken to assess the level of knowledge of the school student and to see the effect of the education intervention program.* ***Materials and methods:*** *This was a quasi-experimental type of study including 372 students of class VIII, IX and X of three high schools during the period of August to November 2018. Data were analyzed by SPSS software.* ***Results:*** *The results before and after educational intervention program are shown in tabulated form.* ***Conclusion:*** *Knowledge level about the disease, mode of transmission, vaccination, prevention and treatment increased significantly after intervention which would help for prevention and control of tuberculosis.*

Key words: *Tuberculosis, Mycobacterium tuberculosis, Intervention program.*

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INTRODUCTION:

Tuberculosis is an infectious and communicable disease. It is one of the world's most widespread and deadly illnesses. It is caused by bacilli called Mycobacterium Tuberculosis. The bacillus spreads by droplet infection and enters the lungs by inhalation and spread to other parts of the body via blood stream. The bacillus may also enter through ingestion of raw milk in case of bovine tuberculosis.

The world health organization compiled a list of 22 high-burden countries that had about 80% of the world's TB cases. Bangladesh ranks 6th where tuberculosis affects a high proportion of the population[1]. Daily about 880 new TB cases and 176 TB deaths occur in Bangladesh. 98% of TB deaths occur in developing countries

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affecting mostly 75% persons in the economically productive age group 15-50 years[2].

TB is very contagious disease and overcrowding, poverty, rapid urbanization, malnutrition, lack of knowledge and proper health education are the factors which facilitate TB spread. BCG vaccination has an important role in prevention of tuberculosis, particularly milliary tuberculosis and tubercular meningitis in children. Pulmonary tuberculosis is treated by combination of drugs in fixed dose (FDC) using DOTs (directly observed treatment strategy) launched by National Tuberculosis control Program (NTP) in November 1993 which covers 99% of the country's population[3]. Treatment duration is at least 6 months and cures the disease but it needs strict adherence to treatment. So health education may play an important role in prevention and treatment of pulmonary tuberculosis.

This study was undertaken to assess the level of knowledge of the school students regarding the cause, transmission, prevention and treatment of tuberculosis, on the basis of which educational intervention program was conducted to see the effect of the program as well as to make the students aware about pulmonary tuberculosis. On the other hand, this study would help the administrative and policy makers to adopt such intervention program at national level.

MATERIALS AND METHODS:

This was a quasi-experimental type of study including 372 students of class VIII, IX and X of three high schools - Karfa Public academy, Dhamura high school and Jalla high school during the period of August to November 2018. Participants were selected non-probability sampling, who agreed to participate in this study. Their knowledge about tuberculosis was judged by face to face interview using pretested structured questionnaire (Appendix). Lesson plan was prepared for intervention program. The educational interventional sessions were done in respective schools by lecture method and group discussion using poster and pictures. After completion of the session feedback were taken from the participants by asking questions. Post-intervention evaluation was done after three months by face to face interview using same questionnaire. Data were collected and analysed by SPSS software.

RESULTS:

This study included 372 students from 3 above mentioned schools; of these, 107 are of class VIII, 130 of class IX and 135 of class X. Age ranges from 13 -16 years (mean 14.7 ± SD 1.24) and 218 were boys and 154 girls.

Table-1: Socio-demographic characteristics of the participants (n=372).

School and class distribution				
School	**Class VIII**	**Class IX**	**Class X**	**Total**
Karfa Public academy	37	56	62	155
Dhamura high school	42	52	46	140

Jalla high school	28	22	27	77
Total	107	130	135	372
Age distribution				
Age	**13 – 14 years**	**14 – 15 years**	**15 – 16 years**	**Total**
Frequency	135 (36.29%)	126 (33.87%)	111 (29.84%)	372
Sex distribution				

Boys	**Girls**	**Total**
218 (58.60%)	154 (41.40%)	372

326 participants (87.63%) out of 372 have heard about the disease TB before intervention but after intervention, knowledge level has increased to 100% (Table- 2).

Table-2: Distribution of the participants about ever heard the name of tuberculosis (n=372).

About TB	**Before Intervention**		**After Intervention**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	326	87.63 %	372	100 %
No	46	12.37 %	0	0
Total	372	100 %	372	100

Among 372 participants, only 11.29% could say, TB is caused by Myco.tuberculosis, 7.53% TB is a communicable disease, 47.31% TB affects the lung and 45.16% cough more than 3 weeks suspect PT before intervention. After intervention these figures increased to 91.94%, 94.09%, 100% and 93.55% respectively (Table-3).

Table-3: Distribution of the participants by level of knowledge of tuberculosis (n=372).

Knowledge about TB	**Before Intervention**		**After Intervention**	
	Yes	**No**	**Yes**	**No**
TB is caused by a bacteria (Myco. tubercolosis)	42 (11.29%)	330 (88.71%)	342 (91.94%)	30 (7.06%)
TB is a communicable disease	28 (7.53%)	344 (92.47%)	350 (94.09%)	22 (5.91%)
TB affects the lung	176 (47.31%)	196 (52.69%)	372 (100%)	0 (0%)
Cough more than 3 weeks suspect PT	168 (45.16%)	204 (54.84%)	348 (93.55%)	24 (6.45%)

Before intervention the participants know the mode of transmission 13.98% by air, 23.12% via coughing and sneezing of TB patients but after intervention increased this knowledge significantly (Table-4).

Table-4: Distribution of the participants about knowledge on the mode of transmission of pulmonary tuberculosis (n=372).

Routes of transmission	Before Intervention		After Intervention	
	Yes	No	Yes	No
By Air	52 (13.98%)	320 (86.02%)	345 (92.74%)	27 (7.26%)
By sneezing & coughing by TB patient	86 (23.12%)	286 (76.88%)	356 (95.70%)	16 (4.30%)

Before intervention, among 372 participants, only 27.42% could say, TB treatment is available, 6.99% duration of treatment is 6 months, and 15.59% TB is curable. After intervention these figures increased to 91.94%, 98.92% and 100% respectively (Table 5).

Table-5: Distribution of the participants by their knowledge about the treatment of Pulmonary tuberculosis (n=372).

About the treatment of PT	Before Intervention		After Intervention	
	Yes	No	Yes	No
Treatment is available	102 (27.42%)	270 (72.58%)	342 (91.94%)	30 (8.06%)
Duration of treatment is 6 months	26 (6.99%)	346 (93.01%)	368 (98.92%)	4 (1.08%)
PT is curable	58 (15.59%)	314 (84.41%)	372 (100%)	0 (0%)

Before intervention 28.49% participants had knowledge that BCG vaccination is one of the preventive measures of TB. But after intervention it was improved to 100% (Table-6).

Table-6: Distribution of the participants by their knowledge about BCG vaccine effective for prevention of tuberculosis.

About BCG Vaccine	Before Intervention		After Intervention	
	Yes	No	Yes	No
BCG Vaccine is effective for prevention	106 (28.49%)	266 (71.51%)	372 (100%)	0 (0%)

DISCUSSION:

Tuberculosis is a communicable disease. Though it is a curable infectious disease, it remains a major public health problem in developing countries and is the most important cause of death in Bangladesh[4]. Lack of knowledge and proper health education, malnutrition, overcrowding, poverty, rapid urbanization, short supply of drugs, drug defaulters, inadequate supervision and monitoring further aggravated the problem[4,5].

Socio-demographic characteristics in this interventional study showed that age of study population ranges from 13 -16 years (mean 14.7 ± SD 1.24) and 58.60% were boys and 41.40% girls.

While assessing the knowledge heard the name of tuberculosis before intervention, 87.63% have heard about the disease TB but knowledge level has increased to 100% (Table- 2) after intervention; it was nearly similar to the study Md. Assaduzzaman et al[6].

At the initial survey before intervention, only 11.29% knew that TB is caused by Myco.tuberculosis, 7.53% TB is a communicable disease, 47.31% TB affects the lung and 45.16% cough more than 3 weeks suspect PT but after intervention these figures increased to 91.94%, 94.09%, 100% and 93.55% respectively (Table-3).

Before intervention majority of participants (62.90%) did not know how TB transmits, while the rest knew the mode of transmission, 13.98% by air, 23.12% via coughing and sneezing but after intervention this knowledge had increased significantly (Table-4). It is different from the study conducted By Rashed Reza Chowdhury (Educational intervention on tuberculosis among the workers in industrial area at Gazipur). Before intervention, knowledge about availability of treatment, duration of treatment and prognosis was poor (only 27.42%, 6.99% and 15.59% respectively). After intervention these figures increased to 91.94%, 98.92% and 100% respectively (Table 5). These were similar to the study conducted by Md Asaduzzaman et al.

Before intervention 28.49% participants had knowledge that BCG vaccination is one of the preventive measures of TB. But after intervention it was improved to 100% (Table-6). It was noted that more than two-third of the respondent 71.51% didn't know BCG vaccine received for prevention of tuberculosis and 28.49% had knowledge about vaccination but after intervention 100% could reply BCG vaccine received for prevention of tuberculosis (Table-6).

In our study, before intervention 71.51% had misconception that prevention of tuberculosis is not possible which was nearly similar to another study where 71.8% opined that prevention was not possible. But after intervention 100% replied that prevention is possible. From the study it was found that respondents' knowledge on pulmonary tuberculosis increased which states the effectiveness of educational intervention program[7,8,9].

CONCLUSION:

The study was an educational intervention program with pre- and post-test designing to assess the level of knowledge about pulmonary tuberculosis among secondary school students in rural area. In the base line

survey it was found that the level of knowledge was below average. After intervention, knowledge level increased significantly about mode of transmission, vaccination, prevention and treatment. They realized that pulmonary tuberculosis is completely cured after appropriate treatment.

Considering all these findings it can be concluded that mass awareness program through mass media, including tuberculosis in school curriculum and educational intervention program for community people can reduce the spread of tuberculosis and strengthen prevention and control measures. Findings will help the policy makers to implement educational intervention programs for prevention and control of tuberculosis among the rural young people.

Appendix

1. Do you hear about a disease called 'Tuberculosis'?
2. What does cause it?
3. How does it spread?
4. Where is the main site of tuberculosis?
5. What are the main features of pulmonary tuberculosis?
6. Is there any treatment of tuberculosis?
7. How long period treatment is required?
8. Where is it available?
9. Does the treatment cure tuberculosis?
10. Is there any vaccine to prevent tuberculosis?

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