

Tuberculosis Awareness Program and Associated Changes in Knowledge Levels of School Students

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ABSTRACT

Background: This study aimed to assess the effectiveness of tuberculosis awareness program amongst school students.

Methods: This school-based interventional study was done on 135 secondary school students. They were randomly selected in field practice area of Urban Health Training Center (UHTC) of a private medical college in Pune city. Health awareness session on tuberculosis was conducted by using various visual and audiovisual aids by the medical college undergraduate students. A pre-test and post-proforma was filled before and after the session. Paired *t*-test was used to assess the effectiveness of awareness program.

Results: There was a highly significant ($P = 0$) increase in the knowledge of school students after the tuberculosis awareness program by medical undergraduate students. The mean pre-test scores were 6.31 (52.58%), and the mean post-test scores were 10.20 (85%). This activity also helped medical undergraduate students to acquire skills related to communication, working in a team, preparation and presentation of various visual aids for health awareness program; they also gained knowledge of research methodology.

Conclusions: Health education program by medical students helped significantly to improve the knowledge of school students regarding tuberculosis. Thus, medical college students can be involved to some extent for conducting health-related behavioral change communication (BCC) activities in schools during their Community Medicine morning posting. Collaboration of private medical colleges, schools, and district tuberculosis units (DTUs) can be ideally achieved under public private partnership (PPP) for health awareness programs.

Keywords: Knowledge, school students, medical students, tuberculosis awareness program

INTRODUCTION

Tuberculosis remains a major public health problem in India. Over 2 million people die of tuberculosis worldwide each year and 4 lakh of them die in India alone. Tuberculosis represents 3.75 of India disease burden, 11 times that of malaria and is

leading cause of death in the 15-45 year group.

Current scenario indicates that urgent need to view and deal with tuberculosis not as a medical or even public health problem alone but as a social problem where innovative interventions have to be taken seriously for its effective control. WHO declared tuberculosis a global emergency in 1993, and the “stop TB partnership” proposed a global plan to stop tuberculosis, which aims to save 14 million lives between 2006 and 2015. One of the 6 components of stop TB strategy is empowering people with TB and communities. In a vast country like India, it is essential to involve every segment of the community for effective prevention and control of tuberculosis.[1] School children are the first target to be involved for this purpose, since children are accustomed to receiving instructions in classroom situations, and they are thus more receptive and responsive to special health education messages and are more inclined to assimilate the information and relay it to other household members. Also, exposing medical students to community is need of the hour. Therefore, it was decided to empower secondary school children of a private English medium school by under graduate medical students with tuberculosis-related knowledge. The aim of this study is to assess the effectiveness of tuberculosis awareness program on knowledge levels of school students.

METHODS

Study design: School-based interventional study.

Study period: June-July 2008, 1 month.

Study setting: Field practice area of Urban Health Training Center (UHTC) of Bharati Vidyapeeth Deemed University medical College (BVDUMC), Pune.

Sample size: Considering prevalence rate from previous study,^[2] a sample size of 119 was estimated at 10% level of error.

Medical students who conducted the awareness program were not very conversant with the local language, hence to avoid any mis-interpretation of information, English medium schools were chosen for the study.

Selection of study subjects: UHTC of BVDUMC caters to selected area of 9 Municipal wards. One ward was randomly selected. There

were 3 English medium schools in the selected ward. Out of these, one school was selected randomly for study. Secondary school students belonging to classes 8th and 9th std. (with A and B division each) were study subjects. There were total 164 students in these 2 classes, which fulfilled the sample size of 119. Considering inclusion and exclusion criteria, the present study was done on 135 school students.

Inclusion criteria

All students of 8th and 9th standard class present on both days of session (one session of pre-test and health education and second of post-test).

Prior permission from principal of the school was taken for conducting the study in the school.

Statistical method

Paired *t*-test was used to assess the effectiveness of tuberculosis awareness program.

VII semester medical students during their community medicine morning posting were involved to implement this awareness program on tuberculosis.

Content of health awareness program was finalized by the researcher after discussion with the concerned science teacher of the school. So, it was a carefully prepared oral presentation of facts consisting of scientific knowledge on tuberculosis like-causative agent, ways of transmission, role of environmental factors, common symptoms, diagnosis, availability of free treatment, meaning of DOTS, prevention of tuberculosis etc., Medical students were actively involved in preparation of health education material for creating tuberculosis awareness under the guidance of the researcher.

Tool of data collection

Pre-structured proforma consisting of close-ended and open-ended questions.

Delivery of health awareness program

Initially, a pre-test was applied to school students. A role-play of 15 minutes was then performed by the medical students. The script of the play was written by the medical students under the guidance of the researcher. Since role-play is an excellent way of ensuring a through involvement of learners, it is a useful educational technique for school children to facilitate learning.

The school students of 8th and 9th std. were then divided into their respective divisions as 8th A and B and 9th A and B. A health awareness activity in

the form of a lecture was then delivered by the medical students for the 4 divisions (i.e. 8A, 8B, 9A, and 9B) simultaneously for 30 minutes.

Medium of communication was English. To make lecture more interesting, various visual aids like chalk board, PowerPoint presentation, overhead projector, posters, charts were used for 4 divisions, and specimens (BCG vial, blister pack of drugs) were displayed, and a film on tuberculosis (of 20 minutes) was screened after the lecture. Disadvantage of lecture as having minimum involvement of students, and passive learning was overcome by taking frequent feedback in between the lecture and conducting a round of question-answers for 15 minutes at the end of session.

Pamphlets, stickers, and a pocket calendar related to TB were given to school students at end of the session, which were provided by city tuberculosis officer (CTO). They were also handed over a list of DOT centers near their area of residence. A gap of 1 week was given, and then, post-test was conducted on the students to assess the effect of awareness program.

Scoring of proforma was done for assessment, and data of 135 students was entered into Excel sheets and was analyzed using paired *t*-test.

The questionnaire consisted of a total of 12 questions related to

- Causative agent of tuberculosis
- Modes of tuberculosis transmission
- Environmental factors in tuberculosis
- Identification of tuberculosis suspect
- Diagnosis of tuberculosis
- Complete cure of tuberculosis possible?
- Availability of free treatment for tuberculosis
- List of DOT centers (place of free treatment) in the adjoining area
- Meaning of DOTS
- Duration of treatment
- Prevention of tuberculosis
- Vaccine for tuberculosis

A score of 1 was given for correct answers and a score of 0 for incorrect answers.

RESULTS AND DISCUSSION

It was an interventional study, which was done to assess the awareness regarding tuberculosis before and after health awareness program amongst 135 secondary school students of 8th and 9th standard. There were 80 boys and 55 girls.

Sixty-nine students were of 8th standard, and 66 students were of 9th standard.

As shown in Table 1, 49% students responded correctly in pre-test that causative agent of tuberculosis is a bacterium while 87% students answered correctly in post-test.

Only 58% of students in pre-test and 89% students in post-test answered correctly about correct modes of transmission of tuberculosis.

Tuberculosis being an airborne disease is transmitted effectively in overcrowded and poorly-ventilated households. In current study, in pre-test, only 64% students agreed to the statement that tuberculosis spreads rapidly in overcrowded and ill-ventilated houses while 93% students agreed to the above statement in post-test.

Tuberculosis affects lung in majority of cases; pulmonary tuberculosis is an infectious disease, people living with or coming in close contact with a patient who has undiagnosed and untreated infectious tuberculosis have risk of getting infected. Therefore, it is very important to identify common symptoms of tuberculosis so that early treatment is started and spread of the disease is stopped. In the present study, 74% students in pre-test and 90% in post-test answered correctly about common symptoms of tuberculosis.

Sputum examination is a cost-effective test,

Table 1: Number of school students who gave correct responses (*n*=138)

Topic	Pre-test (%)	Post-test (%)
Causative agent of tuberculosis	66 (48.88)	118 (87.40)
Modes of transmission	78 (57.77)	120 (88.88)
Role of environmental factors in spread of tuberculosis	87 (64.44)	126 (93.33)
Common symptoms of tuberculosis	100 (74.07)	122 (90.37)
Diagnosis of tuberculosis	34 (25.18)	72 (53.33)
Whether complete cure possible	109 (80.74)	131 (97.03)
Availability of free treatment	99 (73.33)	122 (90.37)
Place of free treatment	84 (62.22)	109 (80.74)
Meaning of DOTS	27 (20)	83 (61.48)
Duration of treatment under DOTS	58 (42.96)	132 (97.77)
Ways of prevention of spread of tuberculosis	41 (30.37)	105 (77.77)
Vaccine for tuberculosis	84 (62.22)	132 (97.77)

available free of cost, for diagnosis of pulmonary tuberculosis under Revised National Tuberculosis Control Program; in current study, 34 (25%) students in pre-test and 72 (53%) students in post-test answered correctly that tuberculosis can be diagnosed by sputum examination.

One Hundred and nine (80%) students in pre-test and 131 (97%) students in post-test agreed that tuberculosis is completely curable.

A study done by U.P. Singh *et al.*,^[3] on school children between 9th and 12th standard, found that 31.62% of urban and 35.65% of rural students were aware that tuberculosis is curable.

A dy done by Goel Sonu *et al.*,^[4] under rural health training center, Naraingarh, Haryana in 2004, amongst students of 9th and 10th class, found that 46.4% of students knew about the correct treatment of tuberculosis.

In current study even though 73% of students knew that free treatment for tuberculosis is available, only 62% students knew about place of getting free treatment in pre-test, and very less, i.e., 20%, students knew meaning of DOTS.

Only 58 (43%) students in pre-test and 132 (97%) students in post-test knew about duration of treatment under DOTS. Percentage rise in knowledge for this response was maximum i.e. more than 50%.

Only 41 (30%) students know ways of prevention of tuberculosis in pre-test while 105 (78%) students in post-test knew correct ways of tuberculosis prevention. And, 62% and 98% of students knew role of BCG vaccine in tuberculosis in pre-test and post-test, respectively.

In a study done in Philippines, by Nazareno PDM *et al.*,^[5] there was significant improvement post-educational intervention in the students' scores on transmissibility ($P = 0.004$) and nature/cause aspect of TB ($P = 0.000$). As to prevention and its effects on physical health, scores were insignificant, but with improvement in the mean prevention scores.

A study done by Tanimowo MO^[6] in Nigeria, on 791 senior secondary students, found that 70.9% of students answered correctly to the question- Can tuberculosis spread through air droplets? 71.6% answered correctly to question- Can it spread through overcrowding? 76.7% of students answered correctly to the question- Can it be cured at all? 89.2% of students answered correctly to the

question- Can the disease be prevented? Thus, a high level of ignorance, wrong knowledge, wrong attitudes, and wrong practices are demonstrated among senior secondary students. Inclusion of health education in school syllabi is advocated.

In a study done by Gopichandran V *et al.*,^[2] about 77% of the students were aware that tuberculosis was caused by bacteria and 85% were aware that it could spread from person to person. Only 28% of the students knew that the treatment for tuberculosis was for 6 to 9 months. Eighty percent of the students knew that cough and weight loss were the common symptoms of tuberculosis, but only 52% were aware that the sputum test was the diagnostic test of choice.

As shown in Table 2, in current study, the post-test knowledge of the students was significantly higher ($P = 0$) than pre-test knowledge. The mean pre-test score was 6.31 (52.58%), and mean post-test score was 10.20 (85%).

In a study by Gopichandran V *et al.*,^[2] on 9th grade students regarding tuberculosis, the mean pre-test score was 7.05 (64%) and the mean post-test score was 9.15 (83.2%). The most significant change in knowledge was for the treatment of tuberculosis.

In a study done by Thilakavathi S^[7] in South India, the impact of health education on the knowledge about tuberculosis, 2 years after the intervention, was studied. There was an overall increase in knowledge, between 18% and 58% in various fields, at the end of 2 years.

A study by Nazareno PDM *et al.*,^[5] demonstrated the effectiveness of an educational intervention in the students' awareness on TB transmissibility and nature and cause. With that data, a school-based TB education program is recommended to be included in the curriculum and should be implemented with the help of all the sectors involved.

Table 2: Class wise mean pre-test and post-test scores of student

Class and division	Number of students	Mean pre-test scores	Mean post-test scores	Sig
8A	34	6.05	9.23	<0.0001
8B	35	5.82	10.4	<0.0001
9A	33	6.69	10.9	<0.0001
9B	33	6.69	10.3	<0.0001
Total	135	6.31	10.20	
Paired <i>t</i> test				

CONCLUSION

Although school students were well informed initially about tuberculosis, health education sessions by medical students using various visual and audiovisual aids helped significantly to improve knowledge of school students regarding tuberculosis. Both medical students and school students participated enthusiastically in this health awareness program. This activity helped medical students to acquire following skills related to communication; working in a team i.e. team work, preparation and presentation of various visual aids for health awareness program, co-ordination with district tuberculosis unit. They also gained knowledge of research methodology etc.

Thus, medical college students can be involved to some extent for conducting health-related behavioral change communication (BCC) activities in schools during their community medicine morning posting. Collaboration of private medical colleges, schools, and district tuberculosis units can be ideally achieved under Public Private Partnership (PPP) for health awareness programs.

Limitations

Due to time constraint, post-test to assess change in knowledge amongst school students was taken within 1 week after the health awareness activity.

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