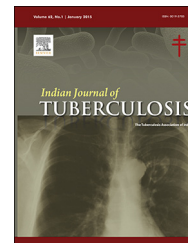


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Original Article

A study on knowledge and awareness about tuberculosis in senior school children in Bangalore, India

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ABSTRACT

Background: Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* (*M. tuberculosis*), commonly affecting the lungs. All health care professionals including the pharmacists provide a valuable public health role in promoting community awareness of TB particularly in reducing stigma attached to TB. Thus, creating awareness at a community level could play a vital role in control and prevention of TB.

Objectives: To determine whether educational intervention would affect the level of TB awareness among students of selected schools and pre-university colleges (PUCs) in Bangalore urban and Bangalore rural regions.

Methodology: The present study was conducted among the students of 8th, 9th, 10th and PUC in Bangalore rural and urban jurisdiction ($n = 2635$). A questionnaire was designed in English and Kannada language, consisting of 20 questions with multiple-choice answers. A 30-minute visual health education was given on TB in English, followed by general pictorial presentation, and the data were collected as pre-test and post-test.

Results: Data collected from 2635 participants during pre- and post-education session revealed that mean score improved from 8.77 ± 2.59 to 14.95 ± 1.99 . Impact of the education session showed a significant knowledge improvement about TB from 1.59% (pre-education) to 49.67% (post-education).

Conclusion: The present study clearly demonstrated that a simple, 30-minute health education session did have a positive impact on knowledge and awareness about TB among school children as observed with increase in mean knowledge score from pre-test to post-test, indicating that empowerment of students could guide the community on various aspects of TB.

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1. Introduction

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* (*M. tuberculosis*), affecting the lungs,¹ producing either a silent, latent infection or a progressive, active disease. Left untreated or improperly treated TB causes progressive tissue destruction and eventually death. *M. tuberculosis* is transmitted from person-to-person by coughing or sneezing, which produces “droplet nuclei” that are dispersed in the air, and may contain one to three organisms.² In healthy people, infection with *M. tuberculosis* often causes no symptoms, since the person's immune system acts to “wall off” the bacteria. The symptoms of active TB affecting the lungs are coughing, sometimes with blood in sputum at late stage, chest pain, weakness, weight loss, fever and night sweats.¹

TB continues to be a major infectious disease killing more humans than any other disease. One-third of the world's population continues to be infected with tubercle bacilli and eight million new cases appear every year besides two million deaths occurring each year due to TB.³ The latest estimates included in the Global TB report 2014 indicates that there were 9.0 million new TB cases in 2013 and 1.5 million TB deaths (1.1 million among human immunodeficiency virus (HIV)-negative people and 0.4 million among HIV-positive people).⁴

India is the highest TB burden country globally, accounting for one-fifth of the global incidence and 2/3rd of the cases in southeast Asia. Nearly 40% of the Indian population are infected with the TB bacillus, and India stands out as having the largest number of incident cases in 2013 (2.0 million–2.3 million).^{4,5} Each year, 1.9 million new cases of TB occur in the country, of which about 0.8 million are infectious new smear positive pulmonary TB cases. As reported in 2009, estimated deaths due to TB each year are about 330,000, over 1000 deaths a day, which means that 2 deaths occur every 3 minutes in India.⁵ The TB situation in the country is further threatened by the emergence and spread of HIV and drug-resistant TB.

Unlike the risk of acquiring infection with *M. tuberculosis*, the risk of developing disease after being infected depends largely on, which includes, the number of *M. tuberculosis* organism's inhaled (infecting dose), the virulence of these organisms, and the host's cell-mediated immune response.² Clinical illness directly following infection is classified as primary TB, and is common among children up to 4 years of age, which is severe and disseminated, and it is usually not transmissible. When infection is acquired late in life, the immune system will contain it, at least temporarily. Dormant bacilli may persist many years before reactivating to produce secondary (or post primary) TB, which is often infectious. Overall, it is estimated that ~10% of persons infected in their youth will eventually develop active TB.⁶

The present scenario stresses on the urgent need to view and deal with TB not only as a medical or public health problem but also as a social problem, where innovative interventions have to be taken seriously for its effective control. A country like India requires awareness among all communities for preventing and controlling TB. Most of the population may not be aware about the danger of drug-resistant TB due to irregularity in consumption of anti-TB

medication for prescribed period of time. Mere access to health facilities with free anti-TB drugs may not be enough to bring about desired success in preventing and controlling TB.

Pharmacist is the most easily accessible member of the primary health care team, and for the public, and can play a more proactive role in preventing and managing TB towards the patients. Pharmacists have a valuable public health role in promoting community awareness of TB, particularly in reducing the stigma and discrimination often associated with the disease.

In purview of all the above, the objective of the present study was to determine if educational intervention would affect the level of TB awareness among students of selected schools and pre-university colleges (PUC) in Bangalore Rural and Bangalore Urban region.

2. Methodology

The present work was a community-based study conducted in students from randomly selected high schools and PUC) in Bangalore Rural and Urban region, who were interested in and gave consent to participate in the study. The total number of 2635 students from high schools (eight, ninth and tenth standard) and PUCs (first year PUC), aged between 11 and 18 years participated in the study. The purpose of the study was explained to the teachers and students and was assured of the confidentiality of all replies. The complete project was done according to Declaration of Helsinki and approved by the Institutional Ethics committee of V.I.P.S., Bangalore.

2.1. Data collection

A questionnaire designed in English and local language (Kannada) was distributed among the students for self-administration. The questions were compiled from “Avoiding tuberculosis” self-study programme on TB, a WHO health academy initiative reference. This designed questionnaire was validated by the project co-coordinator of RNTCP (Revised National TB Control Program). The questionnaire contained a total of 19 questions to assess the knowledge of students regarding TB on the following domains: nature of the disease, its mode of transmission, signs and symptoms, diagnosis, about DOTS (Direct Observed Treatment Short Course) program, risk factors, HIV/AIDS (Acquired Immuno Deficiency Syndrome) and TB co-infection, vaccination, treatment and prevention. All the questions were objective in nature and the respondents were free to choose any answer from the given options. Following this, a 30-minute visual health education session was conducted on TB in English and Kannada (local language). With a gap of one week following the presentation, the same pre-test questionnaire was distributed among the students for self-administration and recorded as post education data.

Feedback was collected from the validated questionnaire towards pre- and post-education session. The feedback of pre-education and post-education questionnaire had 4 optional answers. Responses to the questions were analyzed based on correctness of information. The knowledge score was given for each participant after pre- and post-education session with a

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