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# Developing health promotional skills among medical undergraduates for tuberculosis patients: An innovative way to benefit students as well as patients

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## Abstract:

**BACKGROUND:** Involving medical undergraduate students in patients' health education will not only help in improving students' learning as well as professional and communication skills but also plays an important role in achieving better health outcome of patients. The aim of the study was to assess the impact of students led educational intervention regarding tuberculosis (TB) on their learning and on the patients' knowledge and attitude towards the disease.

**MATERIALS AND METHODS:** One hundred medical undergraduates were included in the study. An integrated lecture on TB was given to all participants followed by preintervention test on TB. One group was then subjected to interactive traditional lecture. Whereas the videos reflecting the experiences of TB patients were shown to the other group and was given an assignment to prepare educational leaflets for TB patients followed by postintervention test for both groups. The patients' satisfaction level with the information given via educational leaflet and the overall perceived benefits of this activity by the students were assessed. Data analysis done using SPSS version 23.0. Independent and paired *t*-test were used to calculate difference of means for quantitative variables.

**RESULTS:** Two groups were comparable preintervention however postintervention there was significant improvement in knowledge in the study group (P0.000). Overall 74.2% of the patients were satisfied with the information provided through leaflets. Students' feedback highlighted that majority of the them felt benefitted from this activity.

**CONCLUSION:** It can be concluded that such type of educational interventions have dual benefits, i.e., learning for the students as well as providing health education to patients which in turn will improve their clinical outcome.

## Keywords:

Health education, health promotion, students learning, tuberculosis

## Introduction

The ultimate goal of imparting medical education is to produce professionals who can efficiently take care of health needs of society. However, various studies have raised the concern on lack of skills for clinical practice, communication,

bioethics, and professionalism among medical graduates.<sup>[1]</sup> To alleviate this problem, competency based medical education (CBME) has come into existence which focuses on patient centered outcome and enables medical students to play meaningful role in patient care.<sup>[2]</sup> CBME as a core strategy is used for education and formative assessment of the medical

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students worldwide.<sup>[3]</sup> It includes designing of teaching learning activities full of relevant content and also ensuring that future clinicians are competent enough for management of infectious diseases also.

Tuberculosis (TB) still remains a challenge in low and middle income group countries. The WHO has implemented END TB strategy with the aim to end this global epidemic. Medical students being future physicians should be aware of determinants, epidemiology, diagnosis and management of TB.<sup>[4]</sup> Medical Council of India has made mandatory to train all medical students on TB as per the Revised National TB Control Program.<sup>[5]</sup> The poor existing knowledge among medical students regarding TB and need to revamp the undergraduate curriculum to improve this has already been emphasized.<sup>[6]</sup> To achieve this desired goal, newer educational strategies should be explored. Involving medical undergraduates in patient education is one of the suggested interventions that can benefit both patients and students.<sup>[7]</sup>

One of the ways by which medical students can contribute in improving knowledge, attitude, and practices of patients is by preparing educational material based on the frequently asked questions or common doubts or myths of the patients diagnosed with TB. This material will serve as an important health education tool for patients especially in busy TB clinics where healthcare providers do not have adequate time for detailed discussion. This integration of patient education into medical education will ensure academic learning for students and improve their professional and communication skills.<sup>[8]</sup> But to educate the patients, students should also be prepared through prior training sessions and provision of constructive feedback by the faculty. There are limited high quality studies which assess the outcome of integration of patient education into medical education.

### Aim

With this background this study was designed to determine the impact of students led educational intervention on their learning as well as:

1. On patient's attitude toward disease, drug compliance and disease management and simultaneously
2. Evaluate the perceived benefits of this activity by the students.

## Materials and Methods

### Study area

Second year medical students of a 250 bedded tertiary care hospital attached to a medical school of North India.

### Study design

Prospective interventional study.

### Sample size

All second year medical students were selected for the study ( $n = 100$ ) as they have adequate knowledge of respiratory physiology, pharmacology, pathology, and microbiology. Moreover, learning and practicing clinical communication skills is a novel experience for them after studying theory continuously for 1 year.

### Study period

November 2018–May 2019 (6 months).

### Study tool and sampling technique

Institutional Ethics Committee approval was taken prior to the study. The study was conducted involving 100 II year undergraduate medical students. Prior written informed consent from students for participation was obtained. Initially all 100 students were subjected to an integrated lecture on TB by faculty from Community medicine, Pharmacology and Microbiology Department. After the lecture students were subjected to preintervention test on TB comprising of total 38 questions of which 21 were knowledge based, 9 attitudes based and 8 were practices based. The questionnaire was validated for construct and content by the subject experts. After the preintervention test, students were randomly divided into two groups: study group (Group S) and control group (Group C), comprising 50 students in each group. Group C was then subjected to interactive lecture in a traditional manner, based on knowledge gaps, attitude, common myths, beliefs and practices of patients, whereas the videos reflecting the experiences of TB patients were shown to Group S.

Students from Group S were further divided into five subgroups. Each subgroup was given the task of preparing educational leaflets within a week for TB patients. Subgroups worked under constant supervision of faculty. After a week time, each subgroup presented its work, received feedback from other subgroups and faculty. After group interactions and inclusion of the work of all five subgroups, a final educational leaflet was prepared in Hindi and English for literate patients and pictorial format for illiterate patients. The copies of the final leaflet prepared by the students of Group S were distributed to the patients. Both the groups were then subjected to postintervention test. This was followed by feedback from the Group S.

To assess patient's satisfaction regarding the information provided through the leaflets, standardized structured satisfaction evaluation form comprising of six questions was designed. A criterion specified grading scale from one to four was used to evaluate the degree of satisfaction. A maximum score of four and minimum score of one was given for response to each question by the patients depending

on their satisfaction level, thus a possible maximum score of 24 and minimum score of 6. Patients were told to fill evaluation forms and explained that this information will be anonymous. Depending on the cumulative score three categories were made i.e., unsatisfied (score 6–12), satisfied (score 13–18), and highly satisfied (score 19–24).

In the final part of the study, the overall perceived benefits of this activity by the students were assessed by a questionnaire comprising of six questions. For students' feedback analysis, we used the 5point Likert scale into three categories, namely agree (Likert scale "4 and 5"), neutral (Likert scale "3"), and disagree (Likert scale "1 and 2").

At the end of the study, videos shown to study group and leaflets prepared by study group were shared with control group. Results of study were shared with both the groups.

### Statistical analysis

The collected data were analyzed using statistical software SPSS version 23 (IBM) IBM Corporation, Armonk, NY, USA). Quantitative data of students' performance were analyzed in the form of mean  $\pm$  standard deviation. Paired *t*-test was used for intra group comparison of test scores before and after the intervention whereas independent *t*-test was used for intergroup comparison to assess the effectiveness of intervention. All tests was performed at a 5% level of significance, thus an association was significant if the  $P < 0.05$ .

## Results

The present study was conducted involving 100 second year undergraduate medical students of which 47 were male and 53 were female. The results are discussed in three parts.

**Table 1: Comparison of pre- and post-intervention test scores between Group C and Group S**

	Preintervention test score	Postintervention test score	<i>P</i>
Group C (control group)	14.82 $\pm$ 3.6	15.7 $\pm$ 3.1	0.673
Group S (study group)	13.90 $\pm$ 3.3	27.18 $\pm$ 3.6	0.000
<i>P</i>	0.541	0.000	

**Table 2: Satisfaction of patients regarding educational intervention (n=42)**

Variables	Unsatisfied	Satisfied	Highly satisfied
Imparted additional knowledge about disease	12	28	2
Know the side effects of the drug	17	23	2
Motivated to complete the treatment	10	26	6
Know about harm of leaving the treatment in between	10	26	6
Guided to prevent spread of infection to others	12	30	0
Answered most of the queries	7	30	5

### Impact on performance of students

As show in Table 1, preintervention test scores were statistically similar in both the groups, though there was improvement in the mean postintervention test score in Group C but it was not statistically significant ( $P = 0.673$ ) while in Group S there was significant improvement in the postintervention test scores as compared to preintervention test score ( $P = 0.000$ ). Even on intergroup comparison, there was statistically significant difference of postintervention test score ( $P = 0.000$ ) as shown in Table 1.

### Patients' satisfaction evaluation

Regarding the patients' satisfaction with the educational material provided, a total of six questions were asked to the 42 patients. As shown in Table 2, overall 25.8% of patients were unsatisfied, whereas 65.9% were satisfied and 8.3% very highly satisfied with the information provided by the educational material.

### Perception of students to this learning activity

Students' feedback was taken on this intervention based on responses to six questions on Likert scale as shown in Figure 1. The best response was seen in question 4 in which 35 students strongly agreed that this intervention promoted self-directed learning. In addition to these responses, students admitted to have better learning, optimal pedagogical atmosphere, an improved understanding of patients' health-care needs. However, the students' feedback in our study also revealed that even though they valued this activity but it required extra work as told by more than 50% of students.

## Discussion

The present study was conducted keeping in mind the global challenge of TB and to explore the option of integration of medical education with TB patients' health education so that we can tackle this disease in a better manner. In our study, we first trained all the medical students regarding TB by traditional lecture, assessed them, again taught them either by traditional method or by students led educational tool method and assessed them again. We also assessed the beneficial effect of this educational tool on the patient's perception towards the disease and students' feedback on this whole exercise. Previous studies have highlighted that

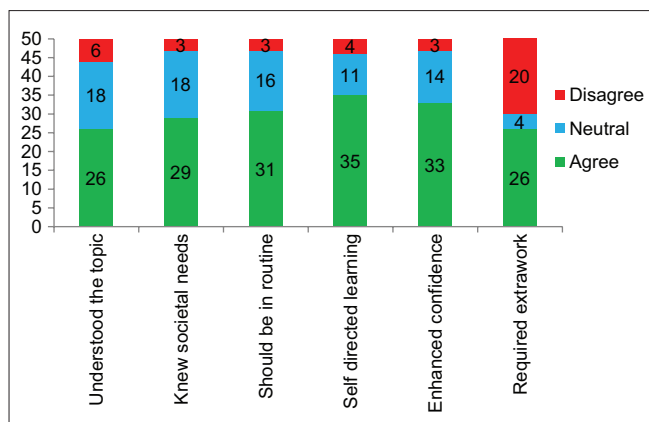


Figure 1: Feedback of the students regarding the intervention (n = 50)

involving undergraduate medical students in patient education enhanced patient health or disease knowledge, health attitude, and also helped in developing health promotional skills among medical students.<sup>[9]</sup>

In our study, there was significant improvement in knowledge regarding TB postintervention in Group S. The knowledge gained is more than it would be by conventional teaching. In another study it has been shown that there is lack of knowledge about TB among medical students and there is improvement in knowledge with health education intervention.<sup>[8]</sup> In our study, Group S students probably learnt better by understanding the perception of TB patients through the videos and then getting more involved while preparing educational leaflets for the patients as compared to conventional teaching in Group C.

Patient health education has been formally defined as “the process by which health professionals and others impart information to patients that will alter their health behaviors or improve their health status.”<sup>[10]</sup> In our study, 74.2% of the patients were satisfied with the health education intervention. Patients understood the consequences of leaving the treatment in between and felt motivated to complete the treatment. Similarly Tola *et al.* also reported that educational intervention for TB patients resulted in decline of treatment nonadherence.<sup>[11]</sup> In another study among drug addicts it has been shown that implementing the health education program had a significant effect on improving the awareness and performance of participants concerning the AIDS disease.<sup>[12]</sup> Similarly, it has been shown that educating patients is the most effective way of disseminating knowledge which helps them to stick to the recommended treatment plan, show compliance and adoption of healthy life style.<sup>[13]</sup>

In our study, feedback from the students regarding this method of medical education was good in all the

parameters with majority of students agreeing that this intervention led to self-directed learning and they have understood the societal needs and have become more confident. The extra work required for such activity as told by more than 50% students is understandable as they are more accustomed to conventional lecture method. Similarly, in another study, high student satisfaction rate among students was observed when they were posted with their clinical supervisors in student-run clinics for primary health care.<sup>[14]</sup> It has been reported in another study that involving students in patient education enhanced student’s patient education self-efficacy, skills and behavior, their relationship with the patients and communication skills.<sup>[15]</sup>

Our study has the limitation of being a small study conducted over a short period of time, involving a small group of students and patients with no cross-over design. Another limitation of our study was that due to time constraint we could not objectively assess the change in knowledge of the patients with the intervention. Despite these limitations our study still provided us an insight on the potential of integration of medical education with patient health education especially in the busy clinics in a country like ours where clinicians cannot devote much time on health education.

Although our study proved its significance of health education on infectious diseases and provides reference for promoting preventive behavior among medical students, future studies involving larger number of subjects are needed to assess the long-term impact of such low cost interventions.

## Conclusion

It can be concluded from the study that such type of educational interventions have dual benefits, i.e., learning for the students as well as providing additional information to TB patients, which not only increased the knowledge and confidence of the students but also increased the knowledge and satisfaction level of the patients. Moreover this could be a low cost strategy toward optimizing patient understanding, acceptance and compliance with TB treatment recommendations.

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## Conflicts of interest

There are no conflicts of interest.

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