

## RESEARCH ARTICLE

# Effectiveness of video-assisted comprehensive teaching program in enhancing knowledge, improving compliance, and life coping mechanism among tuberculosis patients

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### ABSTRACT


**Background:** Tuberculosis (TB) is one of the major global health problems responsible for ill health among millions of people. In India, each year, approximately 220,000 deaths are reported due to TB. Even today, two deaths occur every 3 min due to TB. **Aims and Objectives:** The study was undertaken to assess the level of knowledge of TB among TB patients and to evaluate the effectiveness of video-assisted comprehensive teaching program on enhancing knowledge, improving compliance, and life coping mechanism and to observe the association between the knowledge, compliance, and demographic variables among TB patients. **Materials and Methods:** The quantitative research approach was used. A quasi-experimental, pre-post test design was used. The setting of the study was the TB units of Ernakulam district. Total of 30 samples (10 for each group) were selected using purposive sampling technique. **Results:** Findings revealed that the median difference of the knowledge among three groups was 3.00. Computed value by Wilcoxon signed-rank test showed booklet pre versus booklet post  $Z = 2.807$ ,  $P = 0.002$ ; vestibular autorotation test (VAT) pre versus VAT post  $Z = 2.809$ ,  $P = 0.002$ ; and booklet + VAT pre versus booklet +VAT post  $Z = 2.677$   $P = 0.004$ , respectively. **Conclusion:** The study showed that the booklet, VAT and combined forms (booklet + VAT) are equally effective to improve the knowledge in TB patients regarding TB.

**KEY WORDS:** Tuberculosis; Video-assisted Comprehensive Teaching Program; Knowledge; Life Coping

### INTRODUCTION

Tuberculosis (TB) is the second leading cause of death due to an infectious disease, the first being the human immune deficiency virus (HIV). According to global TB report 2016, there were an estimated 10.4 million new TB cases worldwide,

of which 5.9 million (56%) were men, 3.5 million (34%) women, and 1.0 million (10%) children. People living with HIV accounted for 1.2 million (11%) of all new TB cases. India is one among the six countries accounted for 60% of the new cases. Of the 8.6 million cases, 2.2 (25%) million cases occurred in India, making India the world's highest TB burdened country.<sup>[1]</sup> The global TB strategy developed by the WHO for the period 2006–2015 is the “stop TB strategy.” The vision of the project is a TB-free world; with the objectives such as achieve universal access to high-quality care, reduce human suffering, protect vulnerable populations from TB, TB/HIV, and drug-resistant TB.<sup>[2]</sup> Even though TB is absolutely a curable disease, still about 2.5 lakh people die every year due to the disease in our country. TB is a highly

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contagious and every single patient generates 10–15 more patients of the disease per year. The 2014 annual status report showed that the 1796 smear-positive patients diagnosed and 2470 patients registered for treatment in Ernakulam district. The government of India is trying to eliminate TB in India by 2025 by ensuring affordable and quality healthcare; therefore, we need to re-strategize, think afresh, and have to be aggressive in our approach to end TB by 2025. The directly observed treatment short-course (DOTS) therapy is considered as the best curative method. Lack of knowledge and stigma attached to TB by most societies has been recognized as a major global cause of the limitations of the DOTS strategy for TB control. Chemotherapy for TB underwent revolutionary changes. Isoniazid, pyrazinamide, and rifampin are antibiotics. They prevent tuberculosis bacteria from multiplying in the body and made possible to simplify the treatment and reduce its duration. Another hazard of TB is the increasing type of drug-resistance and poor nutrition. Hence, a strong need is arising to compact with TB in developing countries. The improper adherence to the appropriate treatment regimen is the most prevalent cause of failure in treating TB patients.

A significant difference between the degree of knowledge of the groups of patients and the groups of family relatives before and after the intervention was indicated, with a higher increase in professional-family mix DOTS (PFM-DOTS) group than in family-based (FB-DOTS) group ( $P < 0.001$ ). In PFM-DOTS group 100% of the patients, and in FB-DOTS group 86.8% of the patients followed the recommended drug regimen.<sup>[3]</sup> It was reported that TB knowledge can be considered fairly poor among this community. Less than half of the patients (45.1%) knew that TB is transmitted through air. More grave was the fact that only 17.2% known that it is caused by a microbe. Respondents were poorly informed about consequence of stopping treatment. Conversely, there were well informed about treatment duration.<sup>[4,5]</sup> Knowledge regarding TB using the video-assisted teaching program along with booklet will be an effective method in the treatment and prevention of TB. Enhancing knowledge and increasing compliance and improving the life coping to the disease will help the TB patients to look for the treatment needed and cope with life better. The aim of this study was to evaluate the effectiveness of video-assisted comprehensive teaching program in enhancing knowledge, improving compliance, and life coping mechanism among TB patients.

## MATERIALS AND METHODS

### Participants

The present quasi-experimental study was conducted on TB patients from TB units of Angamaly district. A total of 30 TB patients were randomly selected and assigned equally into three groups, on the basis of following inclusion and exclusion criteria. The patients were recruited after obtaining the written informed consent and ensuring the confidentiality.

### Inclusion and Exclusion Criteria

TB patients who were aged 18–80 years, diagnosed with both pulmonary and extrapulmonary TB, both in Category I and Category II and taking DOTS from TB units, willing to participate in this study, and were able to read English and Malayalam were included in this study. TB patients with mental illness and above 80 years or with hearing or visual impairment were excluded from this study.

### Study Setting

The study was conducted at TB units of Angamaly, Kerala. The selection of study setting was carried out on the basis of feasibility of conducting the study, acquaintance of the researcher with the area, availability of participants, and the cooperation from the management of the TB units. The TB units cater to patients seeking treatment for TB in and around Angamaly. The service consists of outpatients consultations for TB and other minor ailments. The period was 3 months.

### Methods

The study tools include demographic data, disease characteristics knowledge questionnaire, adherence questionnaire, and life coping questionnaire. The prepared tools were given to three experts from the field of Medical-Surgical Nursing for getting their opinion to utilize the tools for the current study. The tools were tested for reliability on split-half method. The reliability was calculated using Karl Pearson correlation coefficient for the life coping rating scale. In this study, Imogene M. King's theory of goal attainment focuses the King's conceptual system, the theory of goal attainment, and transactional process.

### Data Collection

A total of 30 samples were selected from the TB units of Ernakulam district. By convenience sampling technique, 10 TB patients for each group were allotted. Prior permission was obtained from the authorities of the TB centers to identify the patients who will meet the inclusion criteria. After explaining the purpose of the study, the author obtained the informed consent from the selected patients. After obtaining permission, the patients filled the Tool 1 – demographic profile. Then, pre-tests were given which included Tool 2 – knowledge questionnaire, Tool 3 – adherence questionnaire, and Tool – 4 life coping questionnaire. After pre-test, the booklet was given to Group I, vestibular autorotation test (VAT) was given for 45 min for Group II, and VAT and booklet were given to Group III. After 15 days, post-test was given using the same Tools 2–4 for Group III.

### Ethical Consideration

This study was approved by the Institutions Human Ethics Committee of Saveetha Medical College and Hospital 016/05/2016/IBC/SU dated May 26, 2016.

## Data Analysis

As the data were discrete variables and scored, both parametric and non-parametric tests were carried out. The analysis was carried out using Sigmaplot 13.0 (Systat Software Inc. USA). A  $P < 0.05$  was considered to be statistically significant for the interpretation of result.

## RESULTS

Table 1 presents the description of demographic characteristics of the TB patients with TB booklet (B), video-assisted teaching program (V), and booklet + VAT (B+V) Groups. There are equal numbers of TB patients in each group. Among B group and V group 60% of patients belong to 31–50 years and B+V group 60% belongs to 51–70 years. In B+V group, 70% of patients are male; and in V group, 60% of patients are female. In B and V group, 50% were Hindus; however, in B+V group, 60% of patients are Christians. By education, 80% of patients from B+V group and 40% from B group and V group had primary education. The level of income among three groups showed below Rs. 10000, (70%, 90%, and 100%, respectively).

Patients from B group (100%) and V group (80%) are residing in Panchayat area and 90% of B+V group from corporation area. The majority of patient (90%) from V group and 70% from B+V group, 60% from B group are living in the nuclear family system. The majority of patients from each group are married (B = 90%, V = 70%, and B+V = 90%). Table 2 presents the description of TB patients according to disease characteristics. The majority of patients from B group and V group had a history of hospitalization due to TB (80% and 100%, respectively). Among three groups, 40% to 60% of family members were aware about the disease of patients. About 60 to 80% of patients from each group had pulmonary TB and history of sputum positive status. A symptom of cough was present in 50–60% of patients from each group. About 90% patients had a history of weight loss among B group and B+V group. Nearly, 50%, 60%, and 70% of patients from each group had a history of fever, respectively. About 60% of patients from B group had a history of dyspnea. The history of chest pain is present in 80% of patients from B group. Table 3 presents the comparison of effectiveness of TB booklet, VAT, and B+VAT on knowledge and life coping in TB patients in the pre-test and post-test. The comparison of the pre-test and post-test median values of the knowledge

**Table 1:** Description of demographic characteristics of the TB patients with TB booklet (B), video-assisted teaching program (V), and booklet+VAT (B+V) Groups

Demographic characteristics	Categories	Booklet n=10 (%)	VAT n=10 (%)	Booklet+VAT n=10 (%)
Age	≤30	2 (20)	2 (20)	2 (20)
	31–50	6 (60)	6 (60)	2 (20)
	51–70	2 (20)	2 (20)	6 (60)
	71≥	0 (0)	0 (0)	0 (0)
Gender	Male	6 (60)	4 (40)	7 (70)
	Female	4 (40)	6 (60)	3 (30)
Religion	Hindu	5 (50)	5 (50)	2 (20)
	Christian	2 (20)	1 (10)	6 (60)
	Muslim	3 (30)	4 (40)	2 (20)
Education	Illiterate	1 (10)	1 (10)	0 (0)
	Primary	4 (40)	4 (40)	8 (80)
	High school	3 (30)	3 (30)	0 (0)
	Higher sec	2 (20)	1 (10)	0 (0)
	Graduate	0 (0)	1 (10)	2 (20)
Occupation	Unemployed	4 (40)	7 (70)	2 (20)
	Employed	6 (40)	3 (30)	8 (80)
Area of residence	Panchayath	1 (10)	10 (100)	8 (80)
	Municipality	0 (0)	0 (0)	0 (0)
	Corporation	9 (90)	0 (0)	2 (20)
Type of family	Joint family	4 (40)	1 (10)	3 (30)
	Nuclear family	6 (60)	9 (90)	7 (70)
Marital status	Married	9 (90)	7 (70)	9 (90)
	Unmarried	1 (10)	3 (30)	1 (10)
	Divorce	0 (0)	0 (0)	0 (0)
	Widow	0 (0)	0 (0)	0 (0)

Statistics: As it was a pilot study and the sample size was smaller,  $\chi^2$  test was not carried out. TB: Tuberculosis, VAT: Vestibular autorotation test

**Table 2:** Description of TB patients according to disease characteristics

Disease characteristics	Disease categories	Booklet n=10 (%)	VAT n=10 (%)	Booklet+VAT n=10 (%)
H/of hospitalization due to TB	Yes	8 (80)	10 (100)	4 (40)
	No	2 (20)	0 (0)	6 (60)
Awareness of family	No	5 (50)	6 (60)	4 (40)
	Yes	5 (50)	4 (40)	6 (60)
Classification of disease	Pul	8 (80)	6 (60)	7 (70)
	Ex Pul	2 (20)	4 (40)	3 (30)
Sputum smear status	-ve	4 (40)	6 (60)	3 (30)
	+ve	6 (60)	4 (40)	7 (70)
Category	Newly diagnosed	6 (60)	9 (90)	7 (70)
	Retreated	4 (40)	1 (10)	3 (30)
Symptoms				
Cough	No	4 (40)	5 (50)	5 (50)
	Yes	6 (60)	5 (50)	5 (50)
WT lose	No	1 (10)	3 (30)	1 (10)
	Yes	9 (90)	7 (70)	9 (90)
Fever	No	5 (50)	6 (60)	7 (70)
	Yes	5 (50)	4 (40)	3 (30)
Appetite	No	1 (10)	2 (20)	3 (30)
	Yes	9 (90)	8 (80)	7 (70)
Dyspnea	No	4 (40)	6 (60)	7 (70)
	Yes	6 (60)	4 (40)	3 (30)
Chest pain	No	2 (20)	5 (50)	8 (80)
	Yes	8 (80)	5 (50)	2 (20)

Statistics: As it was a pilot study and the sample size was smaller,  $\chi^2$  test was not carried out. TB: Tuberculosis, VAT: Vestibular autorotation test

**Table 3:** The comparison of effectiveness of TB booklet, VAT and B+VAT on knowledge and life coping in TB patients in the pre-test and post-test

Parameter	Group	Median (25 and 75 percentile)	Kruskalwallies one way ANOVA on ranks		Wilcoxon signed-rank test		
			B pre V pre B=V pre	B post V post B=V post	B Pre versus B post	V pre versus V post	B=V pre versus B=V post
Knowledge	B pre	10.5 (8.75–14)	H=4.598 P=0.100	H=4.094 P=0.129	Z=2.807 P=0.002	Z=2.809 P=0.002	Z=2.677 P=0.004
	V pre	13 (11.0–15.3)					
	B+V pre	13.5 (11.0–17.5)					
	B post	22 (20.8–22)					
	V post	22 (20.8–22)					
	B+V post	21 (19.5–21.3)					
Life coping	B pre	79 (74.3–83.5)	H=5.302 P=0.071	H=1.801 P=0.406	Z=0 P=1	Z=0.430 P=0.813	Z=0.356 P=0.734
	V pre	76.5 (72.8–84)					
	B+V pre	84.5 (79.8–92.5)					
	B post	77.5 (75–81.8)					
	V post	75.5 (74.8–82.5)					
	B+V post	82 (72.3–86.8)					

TB: Tuberculosis, VAT: Vestibular autorotation test

among the treatment groups between 25 and 75 percentiles are not showing statistical significant difference (pre-test,  $P = 0.100$ ; post-test,  $P = 0.129$ ) (Kruskal–Wallis one-way ANOVA on ranks). The pre-post values of Groups B, V, and B+V were compared by Wilcoxon signed-rank test (paired test). It shows statistically significant difference ( $P = 0.002$ ,  $P = 0.002$ , and  $P = 0.004$ ) in three groups showing the effectiveness of booklet, VAT, and booklet + VAT in increasing the level of knowledge in TB patients. The comparison of the pre-test and post-test median values of the life coping among the treatment groups between 25 and 75 percentiles are not showing statistical significant difference (pre-test,  $P = 0.071$ ; post-test,  $P = 0.406$ ). The pre-post values of Groups B, V, and B+V were compared by Wilcoxon signed-rank test (paired test). It also shows no statistically significant difference ( $P = 0.813$ ,  $P = 0.734$ ).

## DISCUSSION

This study showed more males are affected by TB (70%). This is supported by a study done by Kaullagekar and Radkar (2007), they reported that TB is significantly ( $P = 0.000$ ) more among males having characteristic with lower standard of living, scheduled tribes from rural area and illiterate population. It increases with age. The statistically significant difference ( $P = 0.002$ ) is observed between urban and rural female's treatment seeking for TB.<sup>[6]</sup> The present study, the detailed statistical analysis using parametric and non-parametric for comparing the effectiveness of intervention among three groups showed a significant difference in pre-test and post-test knowledge scores, i.e.,  $P < 0.002$  booklet group. VAT is also found to be effective in improving the knowledge about TB as shown  $P < 0.002$ , VAT + booklet is found effective in improving the knowledge about TB as shows  $P < 0.004$ . The study findings implied that the booklet and VAT has a vital role in improving the knowledge of TB patients.

The present study showed that out of 30 patients 70–80% were always taking medications self as directed by physician. As being with the busy daily schedule, 40% patients missed their regular medications only once. The knowledge regarding medications through VAT increased the ability to adhere with medications and get their cure from disease. A study conducted by Nepal *et al.* showed TB patients of younger age group were found to be more compliant to the treatment ( $P = 0.02$ ). Compliance was found to be significantly associated with knowledge ( $P = 0.002$ ) and perception ( $P = 0.02$ ) of the patients toward TB.<sup>[7]</sup> In this study, the results show no significant difference in life coping; hence, it is found not effective in the coping of the TB patients' those who received booklet, VAT, and VAT + booklet. Since the number of sample size is small, the intervention does not show the significance in life coping in this study. A study done by Yellappa, Lefever, Battaglioli, Narayan, and Tuyft revealed that TB and DOTS have a large impact on patient's lives which is often extended to the

family and caretakers. The most vulnerable patients faced the most difficulty in accessing and completing DOTS.

## CONCLUSION

The findings of this pilot study indicate that the knowledge of TB patients with regard to TB disease was not up to the standard as most of the patients were having primary education. To impart booklet and VAT and the combination of both are good for imparting knowledge to patients. When we give booklet that will increase the mental image. Along with booklet adding VAT patients are using mind eyes and ears for grasping the knowledge. Hence, both booklet and VAT will be an effective medium to patients. As nurses are in an ideal position to play a positive role in increasing the awareness of the disease and encouraging prevention strategies among TB patients, they should possess a thorough knowledge of TB disease. In addition, creating proper awareness about its cause, transmission, prevention, and making the availability of public service are very essential through the booklet and VAT.

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