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A study to evaluate the effectiveness of video assisted comprehensive teaching program in enhancing knowledge, reducing stigma and effect on bio chemical variables among tuberculosis patients: a pilot study.

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Abstract

The present study was undertaken to assess the level of knowledge on TB among TB patient and to assess the stigma regarding TB in TB patient and to evaluate the effect of video assisted comprehensive teaching program on enhancing knowledge and reducing stigma. The current study was a quasi-experimental, pre-test, and post-test design. TB units of Ernakulam district; TB patients; simple random sampling technique size=30 (10 in each group). The results revealed that the median difference of knowledge among three groups was 3.00 computed value by Wilcoxon Signed rank test showed statistically significant differences in the pre-test and post-test values (Booklet pre *vs.* Booklet post, p=0.002, VAT pre *vs.* VAT post p=0.002, Booklet+VAT pre *vs.* Booklet+VAT post p=0.004 respectively). The findings of this pilot study showed that the knowledge of TB patients with regard to tuberculosis disease was not significant as most of the patients were only having primary education. This has important implications for nursing education. 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 VAT and booklet on TB. The content of both booklet and VAT will provide basics of TB, good food habits, mindful breathing exercise. The pilot study showed that booklet, VAT, B+VAT are all effective. It is preferred to give B+VAT as it would help to understand the importance of the teaching in all setting by all.

Keywords: Tuberculosis, Video assisted comprehensive teaching program, Knowledge, TB.

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Introduction

Tuberculosis (TB) is an infectious disease caused by the bacillus Mycobacterium tuberculosis. It typically affects lungs, called pulmonary tuberculosis, but can also affect other sites, extra pulmonary tuberculosis. The disease is spread through airborne particles contain bacteria by coughing, spitting. TB is diagnosed with sputum smear microscopy, rapid molecular tests and culture methods. The tuberculosis epidemic is large than previously estimated, reflecting new surveillance and survey data from India. Around 10.4 million new tuberculosis cases were estimated worldwide, of which 5.9 million (56%) were among men, 3.5 million (34%) among women and 1.0 million (10%) among children. About 1.2 million (11%) people are living with HIV of all new tuberculosis cases. Another problem arises related to TB is the emergence of multi drug resistant TB (MDR-TB) and an additional 100,000 people with rifampicin resistant TB (RR-TB). In 1940's the effective drug treatments were developed first. The currently recommended treatment for new cases of tuberculosis is a 6-month regimen of four first-line drugs: isoniazid, rifampicin, ethambutol and pyrazinamide. About 85% of success rate is reported to WHO by its 194 members by the new drug regimen. The BCG vaccine is widely used in children but no effective vaccination for the adults to prevent TB [1].

Ensure healthy lives and promote well-being for all at all ages, is the 3rd Sustainable Development Goal adopted by all UN member states in September 2015 at the UN general Assembly. The end TB strategy covers the period 2016-2035 and the overall goal is to 'End the global TB epidemic, defined as around 10 new cases per 100,000 people per year. This is the level found in countries considered to have a low burden of TB in 2015. To achieve this, the targets and milestones, the end TB strategy has four underlying principles and three pillars. The principles are: government stewardship and accountability with

monitoring and evaluation; a strong coalition with civil society organizations and communities, protection and promotion of human rights, ethics and equity, and adaptation of the strategy and targets at country level, with global collaboration [2]. The pillars are integrated, patient centred TB care and prevention, bold policies and supportive systems and intensified research and innovation. Since TB in a contagious disease and epidemic in nature, it causes fear, stigma and discrimination in TB patients. To understand the epidemiology, clinical manifestations, treatment and prevention, different methods of education can be utilized. Kadam found that structured education programme was highly effective to improve the knowledge score and to improve the attitude score of subjects, care givers towards colostomy care of patients. The reading of booklet can produce a mental image about the disease in TB patients. A video assisted teaching program is a good source of stimulation through eyes, ears and thought process in the patient's mind for long time. Both booklet and VAT can be good source of imparting knowledge about TB to the patients.

The awareness regarding TB is very poor among the TB patients who are not well educated and living in poor conditions. Prevention of tuberculosis is a major issue in the public health scenario [3]. Alleviating the illness, suffering and death of individuals caused by TB is a major humanitarian concern. The proper knowledge about the disease can improve the compliance in TB patients. Through review of literature, the investigator realized that the health risk in TB is one of the most prominent health problems and a video assisted teaching strategy will help in prevention and management of TB and promotion of health in the TB patients. The present study was undertaken to evaluate the effectiveness of video assisted comprehensive teaching program in enhancing knowledge, reducing stigma and effect on bio chemical parameters among TB patients.

Materials and Methods

Participants

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

Inclusion and exclusion criteria

The tuberculosis patients who were aged 18 to 80 y, diagnosed with both pulmonary and extra pulmonary 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. Tuberculosis patients with mental illness and above 80 y or with hearing or visual impairment were excluded from this study.

Study setting

The study was conducted at TB units of Ernakulam district, 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 Ernakulam District. The service consists of outpatients consultations for TB and other minor ailments. The time period was three months.

Methods

The tool consists: (1) Demographic and social characteristics; (2) Knowledge questionnaire stigma questionnaire; (3) Bio physiological parameters. The content validity of structured questionnaires and video was ensured by submitting the same to the expert in medical surgical nursing. The reliability of the tool is tested by using Karl Person's co-efficient of correlation which was completed as r=0.87. Patients filled the tool 1-demographic and social profile; then pre-test was given which included tool 2-knowledge questionnaire; tool 3-stigma questioners; tool 4-bio physiological parameters. After per test, booklet on TB is given to first 10 patients (B Group). Video Assisted teaching programme to the next 10 patients (V Group) and both booklet and VAT given to next 10 patients (B+V) group. After 15 d, post-test is given by using the same tools for all three groups.

Data analysis

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

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.

Results

Table 1 presents Description of demographic and social characteristics of the TB patients with Booklet on TB, VAT (video assisted comprehensive teaching program), and Booklet +VAT groups. Among Booklet and VAT group 60% of patients belonged to 31 to 50 y and 60% belonged to 51 to 70 y in B+V group. In B+V group 70% of patients were male and 60% of patients were female in V group. In B and V group 50% were Hindus but in B+V group 60% of patients are Christians. By education 80% of patients from B+V group and 40% from B and V groups had primary education. Patients from B group (100%) and V group (80%) from Panchayath area and 90% of B+V group from corporation area. Majority of patient (90%) from V group and 70% from B+V group 60% from Booklet

group are living in Nuclear Family System. Majority of patients from each group are married (B=90%, V=70% and 90% from B+V group).

Table 1. *Description of TB patients, according to their demographic characteristics.*

S no.	Demographic characteristics	Categories	Booklet		VAT		Booklet+VAT		Statistics
			N=10	%	N=10	%	N=10	%	
1	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	
2	Gender	Male	6	60	4	40	7	70	
		Female	4	40	6	60	3	30	
3	Religion	Hindu	5	50	5	50	2	20	
		Christian	2	20	1	10	6	60	
		Muslim	3	30	4	40	2	20	
4	Education	Illiterate	1	10	1	10	0	0	
		Primary	4	40	4	40	8	80	
		High school	3	30	3	30	0	0	As it was a pilot study and the sample size was smaller X^2 test was not carried out.
		Higher sec	2	20	1	10	0	0	
5	Occupation	Graduate	0	0	1	10	2	20	
		Unemployed	4	40	7	70	2	20	
		Employed	6	40	3	30	8	80	
6	Area of residence	Panchayath	1	10	10	100	8	80	
		Municipality	0	0	0	0	0	0	
		Corporation	9	90	0	0	2	20	
7	Type of family	Joint family	4	40	1	10	3	30	
		Nuclear family	6	60	9	90	7	70	
8	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	

TB: Tuberculosis; Booklet: Booklet on TB; VAT: Video Assisted Teaching program.

Table 2. *Description of TB patients according to social characteristics (N=10).*

	Social consequences	Categories	Booklet		VAT		B+VAT		Statistics
			N=10	%	N=10	%	N=10	%	
1.	Divorce	No	10	100	10	100	10	100	Sample size was smaller X^2 test was not carried out.
		Yes	0	0	0	0	0	0	
2.	Job loss	No	9	90	9	90	6	60	

		Yes	1	10	1	10	4	40
3.	Loss of study	No	10	10	9	90	9	90
		Yes	0	0	1	10	1	10
4.	Isolation from family	No	9	90	10	100	9	90
		Yes	1	10	0	0	1	10
5.	Marital discord	No	8	80	10	100	10	100
		Yes	2	20	0	0	0	0
6.	Drug administration	Self-administered	7	70	8	80	7	70
		Observed by family members	2	20	1	10	2	20
		Observed by health worker	1	10	1	10	1	10

TB: Tuberculosis; Booklet: Booklet on TB; VAT: Video Assisted Teaching program.

Table 3. *Comparison of the effectiveness of booklet, VAT, Booklet+VAT on knowledge, stigma and life coping in pre-test and post-test (N=10).*

				Kruskal Wallis One Way ANOVA on ranks		**Wilcoxon signed rank test**		
S no.	**Parameter**	**Group**	**Median (25 and 75 percentile)**	**B pre** **V pre** **B+V Pre**	**B post** **V post** **B+V post**	**B Pre** **B post**	**V pre** **V post**	**B+V pre** **B+V post**
1.	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)					
2.	Stigma	B pre	33 (23-39.3)	H=3.756, P=0.153	H=1.815, P=0.404	Z=1.521, p=0.156	Z=1, p=1	Z=2.313, p=0.016
		V pre	34 (18.5-36.3)					
		B+V Pre	39.5 (29.8-50.3)					
		B post	31 (26.8-33)					
		V post	34 (22-36.3)					
		B+V post	28 (25.5-33.5)					

TB: Tuberculosis; Booklet: Booklet on TB; VAT: Video Assisted Teaching program; P ≤ 0.05 significance.

Table 4. *Comparison of effectiveness of Booklet, VAT and B+VAT on Biochemical parameters in pre-test and post-test of TB patients (N=10).*

				One Way ANOVA		**Paired t-test**		
S no.	**Parameter**	**Group**	**Mean, SE**	**B pre** **V pre** **B+V pre**	**B post** **V post** **B+V post**	**B pre** *vs.* **B post**	**V pre** *vs.* **V post**	**B+V pre** *vs.* **B+V post**
1.	Hb	B pre	11.3 ± 0.4	F=6.574 P=0.005	F=1.849 P=0.177	t=6.983 p=0.0001	t=4.493 p=0.002	t=4.139 p=0.003
		V pre	12.2 ± 0.1					
		B+V Pre	10.6 ± 0.4					

		B post	12.3 ± 0.3					
		V post	12.9 ± 0.1					
		B+V post	12.3 ± 0.3					
2.	ESR	B pre	90.1 ± 6.0	F=1.788 P=0.187	F=2.203 P=0.130	t=2.953 p=0.016	t=4.378 p=0.002	t=2.446 p=0.037
		V pre	79.7 ± 5.5					
		B+V Pre	69.2 ± 10.9					
		B post	69 ± 7.1					
		V post	52.6 ± 7.8					
		B+V post	44.4 ± 10.1					
3.	SpO_2	B pre	93.7 ± 0.8	F=8.420 P=0.001	F=10.636 P ≤ 0.001	t=-3.482 p=0.007	t=-5.653 p=0.000	t=-1.936 p=0.085
		V pre	92.6 ± 0.8					
		B+V Pre	98.8 ± 0.7					
		B post	96.4 ± 0.3					
		V post	96.1 ± 0.3					
		B+V post	97.8 ± 0.2					

TB: Tuberculosis; Booklet: Booklet on TB; VAT: Video Assisted Teaching program; P ≤ 0.05 significance.

Table 2 presents description of TB patients according to social characteristics. Description of TB patients based on the presence of social characteristics is given in Table 2. Among three groups no one had the history of divorce (0%) due to TB. The job loss occurred in 40% in B+VAT group. Loss of study also occurred in 10% in VAT and B+VAT group. Due to TB 10% of patients experienced isolation from the family among Booklet group and B+VAT group. Only 20% of patients from Booklet group had the history of marital discord. All of the patients were on DOTS during the study period and 70% to 80% of patients were taking medication by self.

Table 3 presents the comparison of effectiveness of the B, V and B+V on knowledge and stigma, in TB patients in the pre-test and post-test. The pre-test and post-test median values of knowledge among the treatment groups was between 25 and 75 percentiles are not showing statistically significant difference (pre-test-p=0.100, post-test-p=0.129). The values of the B pre and B post, V pre and V post, and B+V pre and B+V post were compared by Wilcoxon Signed Rank Test (paired test). It showed statistically significant difference (p=0.002), (p=0.002), (p=0.004) respectively in three groups showing the effectiveness of Booklet, VAT, Booklet+VAT in increasing the level of knowledge in TB patients. The comparison of the pre-test and post-test median values of the stigma was not showing statistically significant difference (pre-test p=0.153, Post-test p=0.404). The values of the B pre and B post, V pre and V post, and B+V pre and B+V post were compared by Wilcoxon Signed Rank Test (paired test). Also showed no statistically significant difference (p=0.156, p=1, p=0.016). Since the sample size was very small, there was no statistical significance.

Table 4 shows the effectiveness of the Booklet, VAT and B +VAT on bio chemical parameters in pre-test and post-test of TB patients is shown in Table 3. The comparison of the pre-test means (booklet, VAT, Booklet+VAT) and post-test means (booklet, VAT, Booklet+VAT) of Hb by One Way ANOVA showed significance in pre-test (p=0.005) but not in post-test (p=0.177). The mean of the B pre and B post, V pre and V post, and B+V pre and B+V post were compared by paired 't' test showed statistically significant difference (p=0.0001), (p=0.002), (p=0.003) respectively.

The comparison of the pre-test means (booklet, VAT, Booklet +VAT) and post-test means (booklet, VAT, Booklet+VAT) of ESR by One Way ANOVA showed significance in pre-test (p=0.005) but in post-test (p=0.130). The mean of the B pre and B post, V pre and V post, and B+V pre and B+V post were compared by paired-'t' test showed statistically significant difference among V pre and V post group only (p=0.002) but not in B pre and B post and B+V pre and B+V Post groups (p=0.016, p=0.037) respectively.

The comparison of the pre-test means (Booklet, VAT, Booklet +VAT) and post-test means (Booklet, VAT, Booklet+VAT) of SpO_2 by One Way ANOVA showed statistically significance in pre-test (p=0.001) and in post-test (p ≤ 0.001) too. The mean of the B pre and B post, V pre and V post, and B+V pre and B+V post were compared by paired-'t' test showed statistically significant difference in B pre and B post, V pre and V post (p=0.007), (p=0.000) respectively but not in B+V pre and B+V post group (p=0.085).

Discussion

TB is one of the most ancient diseases of mankind. Even though the newer modalities for diagnosis and treatment of TB are available, people are suffering worldwide and dying from the disease. In India, each year, approximately 220,000 deaths are reported due to tuberculosis. Two deaths occur every 3 min from TB. Major challenges in the control of TB in India include poor primary health care infrastructure in rural areas of many states and lack of knowledge about the available resources. *Tubercle bacilli* are spread through the air; all are at risk of infection. When disease pathology is in the lungs the bacilli have an easy escape route to the environment. Thus the transmission of TB is very critical as the bacilli contaminate the air. Chemotherapy for TB underwent revolutionary changes and the availability of two well tolerated and highly effective drugs, Rifampicin and Pyrazinamide are made possible to simplify the treatment and reduce its duration. Directly Observed Treatment Short Course (DOTS) is an internationally recognized strategy for treating TB. But poor knowledge regarding TB is an important concern in the prevention of TB. The video assisted teaching programme along with Booklet on TB would help in the treatment and prevention of TB.

A study conducted by Hemavathy et al. to assess the effectiveness of video assisted teaching program on knowledge regarding the benefits of outdoor play among school going children was found highly effective in increasing knowledge of the children [4]. The major findings in pre-test knowledge score revealed poor knowledge 41.67% average knowledge 58.33% while the post-test knowledge score has been increased to good 40% and 60% were excellent. The paired-'t' test revealed that 26.50 found highly effective in increasing knowledge of the children regarding benefits of outdoor play.

After administering the video assisted teaching program the mean of the total knowledge score was increased to 26 from 17 which showed a considerable significant improvement in knowledge of staff nurses regarding BMW management. The present study also showed significant difference in pre-test and post-test knowledge scores of Booklet, VAT, B+V group ('p' value<0.002) ($p \leq 0.002$), ($p<0.004$) respectively. The study findings implied that the booklet and VAT has a vital role in improving the knowledge of TB patients. The findings were in accordance with earlier studies [5-8].

The stigma attached to tuberculosis by most societies has been recognized as a major global cause of the limitations of the World Health Organization's DOTS strategy for TB control. Education about the cause and modes of transmission of TB has helped to reduce TB stigma and could eliminate social stigma entirely.

A survey shows the level of knowledge and training workshop in TB control was effective for elimination of stigmatization in first line caregivers. This knowledge of TB may lead to improved treatment regimens, adherence to treatment, and improved functioning and wellbeing of patients with TB.

Earlier studies conducted about stigma and discrimination associated with TB in Asia found that stigma is a major cause of distress and delay in diagnosis and treatment of many diseases, both in low-income countries and elsewhere [8-12]. In this study VAT+Booklet is found effective to reduce perceived stigma than Booklet and VAT.

Conclusion

The findings of this pilot study showed that the knowledge of TB patients with regard to tuberculosis disease was not significant as most of the patients were only having primary education. This has important implications for nursing education. 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 VAT and booklet on TB. The content of both booklet and VAT will provide basics of TB, good food habits, mindful breathing exercise. The pilot study showed that booklet, VAT, B+VAT are all effective. It is preferred to give B +VAT as it would help to understand the importance of the teaching in all setting by all.

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Conflict of Interest

The authors declare that they have no competing interests.

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