Original Research Article

A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Pulmonary Tuberculosis and DOTs Therapy among Tuberculosis Patients Attending Tuberculosis O.P.D at Selected Hospitals in Bhiwani, Haryana

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Abstract: *Background of the Study:* Tuberculosis is a global public health issue despite the discovery of the causal bacterium over 100 years ago and availability of effective medications and vaccines for prevention and cure. Tuberculosis has a global incidence rate of 119 per lakh, with low-income nations bearing the major burden at 197 per lakh. High-income countries have nine per lakh people, while middle-income countries have 85. Eight out of ten tuberculosis patients are economically productive aged 15-49. It kills more adults than any other infectious disease. India has roughly one-third of the global tuberculosis load. *Aim of the Study:* The goal of this study is to evaluate the efficacy of a planned education program on students' understanding of pulmonary tuberculosis and the DOTS treatment method. *Methodology:* This study examined how a comprehensive teaching program improved patients' understanding of pulmonary tuberculosis and DOTS therapy in the outpatient department (OPD) of selected hospitals in Bhiwani, Haryana. To attain the purpose, the researcher used pre-experimental study design. The study included 60 patients at the Directly Observed Therapy Short-course (DOTS) clinic in Bhiwani, Haryana. The researchers selected samples using convenience sampling. A structured knowledge questionnaire was used to collect data in this study. A group of tuberculosis patients provided data for ten days. The pre-test was given on May 17, 2021, before formal education began. Ten days later, the post-test was given. Data was processed and analyzed using descriptive and inferential statistics. *Results:* The mean pre-test knowledge score was 9.45, with a 2.65 standard deviation. In the post-test, the mean score was 19.40 with a standard deviation of 1.86. The computed mean difference was 9.95. The paired 't' test yielded 24.60 with 59 degrees of freedom. A p-value of 0.01 indicated statistical significance.

Keywords: Effectiveness, Planned Teaching Program, DOTS Therapy, Tuberculosis Patients, Knowledge.

INTRODUCTION

Tuberculosis is an infectious illness caused by Mycobacterium tuberculosis. Like the ordinary cold, it spreads airborne. Patients with Pulmonary Tuberculosis (PTB) can spread the disease through coughing, sneezing, or talking, which spreads the bacteria into the air. A person inhaling the bacterium may contract Tuberculosis but not necessarily develop the disease. The Tuberculosis skin test will be positive. If the germs overwhelm the immune system, Tuberculosis develops.

Tuberculosis patient symptoms vary based on the affected body place. Common pulmonary tuberculosis symptoms include coughing with sputum (often bloody), shortness of breath, and chest pain. Symptoms include night sweats, fever, weight loss, appetite loss, weariness, and muscle weakness. Individuals with contagious pulmonary tuberculosis infect 10-15 persons year if untreated. One in ten Tuberculosis-infected individuals without HIV get the disease at some point in their lives. People with HIV and Tuberculosis are at higher risk of developing the disease.

Tuberculosis diagnosis relies on clinical assessment, bacteriological, and radiographic investigations. Microscopy of a sputum smear is the most cost-effective and direct method for detecting Tuberculosis bacteria and confirming the diagnosis within 1-2 days. To assess drug susceptibility, bacteria must be cultured and analyzed in a lab for 6-16 weeks. This allows for the identification of drug-resistant Tuberculosis. X-ray findings may suggest Tuberculosis, but more testing is necessary for confirmation.

DOTS Therapy aims to assure cure by providing the most effective medication and monitoring its use. Only this method has been shown effective globally on a program basis. In DOTS therapy, a health provider or trained person observes the patient swallowing medications throughout the intensive phase. During the continuing phase, patients receive a multiblister comb pack of medicine for one week. The initial dose is eaten by the patient in the presence of a health worker or qualified person. Health workers evaluate medication usage during the continuation phase by returning an empty multiblister comb pack when the patient collects the drug for the following week. Drugs are packaged in patient-specific cartons with adequate shelf life. In the program, alternate-day treatment is utilized. The instances fall into three categories: category 1, category 2, and category 3. In conclusion, the challenge in chemotherapy today is not introducing new regimens or stronger medications, but effectively applying existing ones.

Need for the Study

Tb is the second leading infectious illness killer of adults worldwide after HIV/AIDS. About 13.2 million (new and old cases) are impacted globally, 9.2 million annually. TB affects one-third of the world's population. One in 10 may get TB illness, which causes chronic cough, weight loss, night sweats, and irreparable lung damage.

TB incidence in India is 168/lakh and prevalence 288/lakh. Mortality from TB is 3.3 million per year, 900 per day, 2 per 3 minutes. MDR-TB is 2-3% in new TB cases and 12-15% in retreatment. HIV prevalence among new TB cases is 5-19%, varies by state. Karnataka (Bijapur, Bagalkote), Andrapradesh, Tamilnadu have higher HIV/TB rates 2. Despite the availability of TB medications, many people lack access to diagnostic equipment, consistent and adequate anti-TB treatment, and educated health staff. Human mortality is high in developing nations. Most (95%–99%) live in impoverished nations with minimal resources. Tuberculosis is a leading cause of death in India, although early detection and follow-up can stop its spread. India is one of 22 high-burden nations. Twenty percent of global TB cases are in India.

The DOTS (Directly observed treatment, short course) technique is the most cost-effective way to control tuberculosis and minimize infection worldwide. DOT's is the only way to guarantee a cure. The problem is expanding DOT coverage to serve the most people effectively1. India has around 1 million untreated TB patients, 25% of whom live in North India. Operation ASHA's 34 DOT'S centers in Delhi serve 1,200 patients, but approximately 20,000 more remain untreated. To serve its population, Delhi needs 200 more centers and North India thousands. Special groups are extremely susceptible to TB infection, and whole communities disseminate disease like wildfire.

A Luck now District observational cohort study on factors affecting DOT non-compliance found that non-compliance was highest in patients aged 35–44 (25.4%), illiterates (13.9%), upper class (16%), smokers (11.5%), alcoholics (23.9%), and drug users (47.4%).

Tb is the second leading infectious illness killer of adults worldwide after HIV/AIDS. Globally 9.2 million are afflicted annually. One in 10 will acquire Tuberculosis, which causes chronic coughing, weight loss, night sweats, and irreparable lung damage. One of the deadliest diseases is tuberculosis. One fourth of humanity has tuberculosis. Globally, 10.4 million people contracted tuberculosis in 2016. Tuberculosis killed 1.7 million people worldwide. HIV-positive people die more from tuberculosis.

In 2014, a research in 11 Bihar districts found that 24% of patients terminated therapy before 25 weeks and 42% retained symptoms after 5 weeks, compared to 28% after 25 weeks. According to the Global Tuberculosis Report 2016, India has 28 lakh cases of TB and Global mortality is 14 lakh, with India having 4.8 lakh. India has a quarter of the global TB load.

The Revised National Tuberculosis Control Program annual report 2017 lists Uttar Pradesh (297,746), Maharashtra (195,139), Madhya Pradesh (129,915), Gujarat (126,665), and Rajasthan (106,756) as the top five states with the most tuberculosis cases. The Revised National Tuberculosis Control Program annual report 2017 reported 6182 cases in Mehsana district, 2538 of which were public and 3644 private.

Objectives:
1. To assess the pre-test and post-test knowledge regarding Pulmonary Tuberculosis and DOTs therapy among Tuberculosis patients.

2. To assess the effectiveness of structured teaching programme regarding knowledge of Pulmonary Tuberculosis and DOTS Therapy.
3. To find out the association of post-test knowledge with selected demographic variables.

METHODOLOGY

The purpose of this study was to assess the efficacy of a structured education program in enhancing the understanding of Pulmonary Tuberculosis and DOTS Therapy among Tuberculosis Patients attending Tuberculosis O.P.D at selected hospitals in Bhiwani, Haryana. In order to achieve the intended objective, the researcher employed a pre-experimental study design. The study included a sample size of 60 patients who were receiving therapy at the Directly Observed therapy Short-course (DOTS) center in Bhiwani, Haryana. The researchers employed a convenience sampling strategy to choose the samples. The data gathering instrument employed in this study was a structured knowledge questionnaire. Data was collected over a period of ten consecutive days from individuals diagnosed with Tuberculosis. The pre-test was conducted on May 17, 2021, immediately following the implementation of the structured instruction program. The post-test was conducted on the tenth day. The data that was gathered was subjected to processing and analysis using descriptive and inferential statistical methods.

RESULTS

Table–I: Frequency and Percentage distribution of Samples According to Socio-Demographic Variables, (n = 60)

S. No	Demographic Variables	Frequency	Percentage
1.	**Age**		
	a. 21 – 40 years	6	10.0
	b. 41 – 60 years	54	90.0
2.	**Gender**		
	a. Male	43	71.6
	b. Female	17	28.4
3.	**Religion**		
	a. Hindu	53	88.3
	b. Christian	4	6.7
	c. Muslim	1	1.7
	d. Sikhs	2	3.3
4.	**Type of Family**		
	a. Nuclear	41	68.3
	b. Joint	19	31.7
5.	**Occupation**		
	a. Govt	3	5.0
	b. Private	28	46.7
	c. Self-employed	20	33.3
	d. Unemployed	9	15.0
6.	**Education**		
	a. 10th standard	29	48.3
	b. 12th standard	22	36.7
	c. Graduate	9	15.0
7.	**Marital status**		
	a. Unmarried	51	85.0
	b. Married	9	15.0
8.	**Residential Area**		
	a. Urban	47	78.3
	b. Rural	13	21.7
9.	**Duration of DOT's Therapy**		
	a. 3 – 6 Months	24	40.0
	b. Above 6 months	20	33.3
	c. More than 12 months	16	26.7

Table – I shows the frequency and percentage distribution of samples according to socio-demographic variables.

Ninety percent (54) of individuals diagnosed with tuberculosis are between the age range of 41-60 years, while the remaining ten percent (6) belong to the age group of 21-40 years. The majority of Tuberculosis patients, specifically 88.3% (53 individuals), are affiliated with the Hindu religion. Additionally, 6.7% (4 individuals) of patients identify as Muslim, 3.3% (2 individuals) as Sikh, and 1.7% (1 individual) as Christian. The data shown in the table above indicates

that a majority of 68.3% (41) of Tuberculosis patients are from Nuclear families, while 31.7% (19) belong to Joint families. The data shown in the table above indicates that the largest proportion, 48.3% (29 individuals), of tuberculosis patients are from the 10th grade. Additionally, 36.7% (22 individuals) belong to the 12th grade, while 15.0% (9 individuals) have a graduate degree. The data shown in the above table indicates that a significant proportion of tuberculosis patients, specifically 40.00% (24 individuals), experienced a duration of 3-6 months. Additionally, 33.3% (20 individuals) had a duration beyond 6 months, while 26.7% (16 individuals) had a duration exceeding 12 months.

Table–II: Distribution of Samples According to Level of Knowledge regarding Knowledge Regarding DOT's Therapy, (n = 60)

Level of Knowledge	Pre – Test		Post - Test	
	F	%	F	%
Inadequate	41	68.3	12	20.0
Moderate	15	25.0	18	30.0
Adequate	4	6.7	30	50.0

The levels of knowledge regarding DOT's therapy are depicted in Table – II. This table shows the distribution of samples according to those levels.

During the pre-test, the vast majority of the samples, 41 (68.3%), exhibited inadequate levels of knowledge. There were 15 people in the sample population who had moderate levels of knowledge (25.0%). Four of the samples, or 6.7% of the total, possessed adequate levels of expertise. At the time of the post – test, fifty percent of the total samples, which amounted to thirty, demonstrated an appropriate knowledge of DOTs therapy. There were 18 people in total who possessed a moderate level of knowledge (30.0%). A degree of knowledge that was inadequate was found in around 12 (20.0%) of the total samples.

Table–III: Effectiveness of Structured Teaching Program Regarding Knowledge on DOT's Therapy, (n = 60)

Test	Mean	SD	Mean Difference	Paired T – test	P value
Pre-Test	9.45	2.65	9.95	24.60 (df = 59)	0.001
Post - Test	19.40	1.86			

Based on the data provided, it can be inferred that the implementation of a structured training program yielded positive results in terms of enhancing the knowledge of participants with respect to Directly Observed Therapy, short-course (DOTs) treatment. The mean score of pre-test knowledge was 9.45, with a standard deviation of 2.65. In a similar vein, the mean score obtained in the post-test was 19.40, accompanied by a standard deviation of 1.86. The calculated mean difference score was 9.95. The calculated value for the paired 't' test was 24.60, with 59 degrees of freedom. This value was found to be statistically significant at a p-value of 0.01.

Table–IV: Association Between Post – Test Knowledge and Socio-Demographic Variables, (n = 60)

S, No	Demographic Variables	Chi-Square Value	p value
1.	Age	0.842	0.85
2.	Gender	1.421	0.95
3.	Religion	1.045	0.56
4.	Qualification	0.842	0.64
5.	Marital Status	2.452	0.82
6.	Residential Area	3.410	0.94
7.	Duration of DOTs Therapy	0.845	0.12

From Table – IV we could find that none of the socio-demographic variables were associated with post-test knowledge scores of the samples.

DISCUSSION

In the present study, Ninety percent (54) of tuberculosis patients are 41-60 years old, while ten percent (6) are 21-40. The bulk of Tuberculosis patients, 88.3% (53), are Hindu. Patient demographics include 6.7% (4 Muslims), 3.3% (2 Sikhs), and 1.7% (1 Christian). The table above shows that 68.3% (41) of tuberculosis patients are nuclear, while 31.7% (19) are joint. Most tuberculosis cases, 48.3% (29), are 10th graders, according to the table above. 36.7% (22 people) are 12th graders, and 15.0% (9 people) are graduates. According to the table above, 40.00% (24 patients) of tuberculosis patients had a duration of 3-6 months. Additionally, 33.3% (20 people) had a duration over 6 months and 26.7% (16 people) over 12 months.

In 2008, Sharada MA *et al.*, did a study in the slums of Bangalore city to find out how people looked for health care and how much they knew about Tuberculosis symptoms, causes, modes of spread, diagnosis, and treatment. Most

people with lung symptoms and cases of pulmonary tuberculosis didn't know much about the disease, and most people with pulmonary symptoms didn't know that government health facilities offer free services to fight tuberculosis. It is clear that educational programs need to focus on people who live in slums.

In the present study, most samples—41 (68.3%)—lacked knowledge during the pre-test. The sample comprised 15 somewhat knowledgeable people (25.0%). Four samples (6.7%) were skilled. At the post-test, 50% of thirty samples showed DOTs therapeutic knowledge. There were 18 somewhat knowledgeable people (30.0%). About 12 (20.0%) of the samples had poor knowledge.

This study found the aforementioned. Shrestha B, AB Bhatt, and CP Bhatt (2010) conducted a prospective study on patients' tuberculosis treatment knowledge. This poll found that most patients recognized tuberculosis may be cured with regular therapy, duration, and manner. Patients lacked information of incomplete treatment consequences. This study proposes emphasizing patient education on partial therapy outcomes.

The mean pre-test knowledge score was 9.45, with a 2.65 standard deviation. In the post-test, the mean score was 19.40 with a standard deviation of 1.86. The computed mean difference was 9.95. The paired 't' test yielded 24.60 with 59 degrees of freedom. A p-value of 0.01 indicated statistical significance.

Rajeswari (2010) examined how Structured Teaching Program affected mothers' knowledge and practices of infant raising in Tirupura District communities. The experimental group had a pre- and post-test knowledge score of 14.5 and the control group 0.9 at p = 0.05. It shows a large knowledge gap between experimental and control groups.

A descriptive cross-sectional study by Ingle Krishnan Gopal *et al.*, (2009) examined the impact of Tuberculosis control awareness initiatives on target populations. The study found that different sociocultural groups had different views of educational messages, tuberculosis stigma persists despite a campaign, and television is the most effective health education medium. Education should be tailored to a specific subpopulation since patient and general population knowledge and behavior affect treatment-seeking and completion.

CONCLUSION

In this study, most TB patients knew little about pulmonary TB and DOTs therapy. After descriptive study, most patients exhibited moderate knowledge. The present study assessed TB patients' awareness of TB and DOTs therapy in selected Bhiwani, Haryana hospitals. The study used descriptive design and non-probability convenient sampling with 60 participants. Tuberculosis and DOTs therapeutic knowledge was assessed via questionnaire. General system theory underpinned our study. A 6-patient pilot research was undertaken in May 2021 in Haryana to test the study's feasibility and practicability. Data was analyzed using descriptive and inferential statistics.

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