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A study to assess the knowledge on prevention of transmission of tuberculosis among dots providers at selected dots centers, Tirupati

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Abstract
Background: Tuberculosis is an infectious disease caused by the bacterium Mycobacterium tuberculosis. Tuberculosis generally affects the lungs, but can also affect other parts of the body. Most infectious do not have symptoms, in which case it is known as latent tuberculosis. Tuberculosis is spread through the air when people who have active TB in their lungs cough, spit, speak or sneeze.
Objectives: To assess the knowledge on prevention of transmission of tuberculosis among DOTS Providers. To find out the association on knowledge on prevention of transmission of tuberculosis with the selected socio-demographic variables.
Methodology: A descriptive study was involving 100 DOTS providers, Non probability purposive sampling technique was used to select the sample, Study carried out with self administered questionnaire. Data were collected using a structured questionnaire. Data regarding socio-demographic characteristics of DOTS Providers and questionnaire related to Knowledge on prevention of transmission of tuberculosis. Were analysed with Cronbach"s Alpha, ANOVA and Correlation Coefficient. Hypothesis (H_0) stating that there is a no significant association between the Knowledge on prevention of transmission of tuberculosis with selected socio demographic variables was accepted after the analysis.
Results: Out of 100 Study participants, majority (53%) of samples had moderate level of knowledge followed by (36%) had adequate and very few (11%) had inadequate level of knowledge.
Conclusion: There should be improved awareness regarding importance of tuberculosis transmission by providing information regarding preventive measures of tuberculosis & its transmission and also various services available to screening in order to improve the health of the people.

Keywords: Tuberculosis, Transmission, DOTS providers, ANOVA

Introduction

A disease that is transmitted through direct contact with an infected individual or directly through a vector is called a communicable disease [1]. It is one that is spread from one person to another through different ways that include: contact with blood and body fluids: breathing in an airborne virus: or by being bitten by an insect [2]. There are so many communicable diseases. Although communicable diseases can be categorized in different ways, W.H.O uses three guiding principles for prioritization of diseases with a large –scale impact on mortality, morbidity and disability. Tuberculosis is the first leading cause for death among all the communicable diseases. (WHO-2010) [3].

Tuberculosis is a specific infectious disease caused by Mycobacterium tuberculosis [4]. The disease primarily affects lungs and causes pulmonary tuberculosis. It is through 90%, symptoms which may include the Chronic cough for more than 2 weeks, which is usually worse in the mornings, Continuous low grade fever at evenings, Loss of appetite, Weight loss, Chest pain, Haemoptysis, Breathlessness, Night sweating, etc. In extra pulmonary tuberculosis 15-20% of active cases, the infection spreads outside the lungs, causing other kinds of TB. It can also affect intestines, meninges, bones and joints, lymph nodes, skin and other tissues of the body. The disease is usually chronic with varying clinical manifestations. The disease also affects animals like cattle, this is known as bovine tuberculosis, which may sometimes be communicated to man. Pulmonary tuberculosis, the most important form of tuberculosis which affects man, will be considered here for the present study. (K.Park-2015) [5].

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Tuberculosis is spread through air when people who have active TB in their lungs cough, spit, speak or sneeze. People with latent TB do not spread the disease [6]. When people with active pulmonary TB cough, sneeze, speak, sing or spit, they expel infectious aerosol droplets 0.5 to 5.0 mm in diameter. A single sneeze can release up to 40,000 droplets. Each one of these droplets may transmit the disease, since the infectious dose of tuberculosis is very small (the inhalation of fewer than 10 bacteria may cause an infection) [7].

DOTS is a strategy to ensure cure by providing the most effective medicine and confirming that it is taken. It is the only strategy which has been documented to be effective worldwide on a programme basis. In DOTS, during the intensive phase of treatment, a health worker (or) other trained person watches as the patients swallows the drug in his presence. During continuation phase, the patient is issued medicine for one week in a multiblister combipack, of which the first dose is swallowed by the patient in the presence of health worker (or) trained person. The drugs are provided in patient wise boxes with sufficient shelf-life. In the programme alternate day treatment is used [8].

DOTS programme provides, free of cost, quality anti tubercular drugs across the country through numerous Primary Health Centers and the growing number of private sector DOTS–providers, here the DOTS providers play a very important role in the programme. DOTS Providers are primarily responsible for the success of the programme at the field level by giving a VIP status in the programme [9]. In this DOTs provider who ensures that the patient takes right drugs in right doses at right interval for right duration, DOTs providers should be accessible, acceptable, and accountable.

Need for study
About one third of the world's population is infected with tuberculosis (TB) bacteria. Only a small proportion of those infected will become sick with TB. People with weakened immune systems have a much greater risk of falling ill from TB.
In 2015, the 30 high TB burden countries accounted for about 87% of new TB cases. TB occurs in every part of the world, but the majority of cases are in Asia (61%) and in Africa (26%) [10].
In 2015, there were an estimated 10.4 million new cases of tuberculosis (TB) worldwide. Six countries accounted for 60% of the total, with India leading the count, followed by Indonesia, China, Nigeria, Pakistan and South Africa. But TB is curable and preventable [11].
Tuberculosis is a global emergency particularly in developing countries. Andhra Pradesh is the third largest state in India. Tuberculosis does not reveal any marked spatial preference, it is reported across the state, though Prakasham, Adilabad, Anantapur, khammam and vizianagaram districts have a higher incidence.

Objectives
- To assess the knowledge on prevention of transmission of tuberculosis among DOTS Providers.
- To find out the association between knowledge on prevention of transmission of tuberculosis with the selected socio-demographic variables.

Hypothesis (H0): There is a no significant association between the knowledge on prevention of transmission of tuberculosis with the selected socio demographic variables.

Methodology
Non-experimental Research Approach was adopted for this study, Descriptive Research Design was used. The setting of the study was Mangalam & S.V.R.R.G.G.H DOTS centers. The target population chosen for this study was DOTS providers in and around Tirupati. DOTS Providers who are attending to Mangalam, and S.V.R.R.G.G.H, DOTS Centers. Sample is a smaller part of the population selected in such a way that the individual in the sample represents the characteristics of population. The sample of the present study includes 100 DOTS providers who fulfill the inclusion criteria. For this study Non-Probability purposive sampling technique was adapted based on inclusion criteria.

Independent variables: Socio-demographic variables.

Dependent Variables: Knowledge on prevention of transmission of tuberculosis.

Criteria for sample selection
Inclusion criteria
DOTS providers who are;
- Willing to participate in the study.
- Attending to the DOTS centers in Mangalam P.H.C &S.V.R.R.G.G.H, hospital.
- Able to understand Telugu/English.

Exclusion criteria
DOTS providers who are;
- Not available at the time of data collection.
- Selected for pilot study
- With mental illness.

Development and description of tool:
Data collection tools are procedures (or) instruments used by the researcher to observe (or) to measure the key variables in research problem.
Tool was developed, based on the relevant literature, text books, journals, websites, under the guidance of experts, to assess the level of knowledge on prevention of transmission of tuberculosis among DOTS providers.

It consists of 2 sections
Section-I: It includes socio-demographic variables like age, gender, religion, educational status, monthly income, occupation, marital status, area of residence, Years of experience as a DOTS provider, regarding training of the DOTS.

Section-II: Self administered questionnaire which consist of 34 questions to assess the level of knowledge on prevention of transmission of tuberculosis among DOTS Providers. Each question has 4 options. Each right answer carriers 1 mark, each wrong answer carries 0 mark.

Results

Table 1: Distribution of level of knowledge regarding prevention of transmission of tuberculosis among DOTS Providers.

S. No	Knowledge level	Frequency (f)	Percentage (%)
1	Inadequate	11	11.0%
2	Moderate	53	53.0%
3	Adequate	36	36.0%

Above table shows the knowledge levels among DOTS providers regarding prevention of transmission of tuberculosis. Half of the samples i.e 53 per cent had moderate level of knowledge followed by 36 per cent of respondents having adequate and (11%) with inadequate level of knowledge.

Table 2: Mean and standard deviation for level of knowledge on prevention of transmission of tuberculosis among DOTS Providers.

S. No	category	mean	standard deviation
1.	Knowledge	2.25	0.642

Table 3: Association between the socio-demographic variables with level of knowledge on prevention of transmission of tuberculosis. (n=100)

S. No	Demographic Variables	Assess The Knowledge On Prevention Of Transmission Of Tuberculosis among DOTS Providers						Chi-square (χ^2)	df
		Inadequate		Moderate		Adequate			
1.	**Age**	F	%	f	%	f	%		
	24 – 27	2	18.2	13	24.5	5	13.9	χ^2 = 12.806* (p = 0.046)	df= 6
	28 – 31	6	54.5	18	34.0	23	63.9		
	32 - 35	2	18.2	5	9.4	5	13.9		
	Above 36	1	9.1	17	32.1	3	8.3		
2.	**Gender**								
	Male	1	9.1	14	26.4	2	5.6	χ^2 = 7.159* (p = 0.028)	df= 2
	Female	10	90.9	39	73.6	34	94.4		
3.	**Religion**								
	Hindu	6	54.5	23	43.4	31	86.1	χ^2 = 18.832** (p = 0.001)	df= 4
	Muslim	3	27.3	25	47.2	5	13.9		
	Christian	2	18.2	5	9.4	0	0.0		
4.	**Education Status**								
	No formal education	0	0.0	0	0.0	4	11.1	χ^2 = 26.301** (p = 0.001	df= 8
	Primary	1	9.1	4	7.5	13	36.1		
	Secondary	7	63.6	22	41.5	13	36.1		
	Intermediate	2	18.2	20	37.7	4	11.1		
	Graduation	1	9.1	7	13.2	2	5.6		
5.	**Occupation**								
	Anganwadi worker	5	45.5	32	60.4	0	0.0	χ^2 = 42.877** (p = 0.000)	df= 6
	Teacher	1	9.1	7	13.2	2	5.6		
	Asha worker	4	36.4	7	13.2	23	63.9		
	Ex patient	0	0.0	0	0.0	0	0.0		
	Social worker	1	9.1	7	13.2	11	30.6		
6.	**Family Income**								
	Below 5000	4	36.4	9	17.0	19	52.8	χ^2 = 35.693** (p = 0.000) -	df= 6
	5001 – 10000	6	54.5	37	69.8	4	11.1		
	10001 – 15000	0	0.0	1	1.9	8	22.2		
	15001 – 20000	1	9.1	6	11.3	5	13.9		
7.	**Marital status**								
	Single	0	0.0	0	0.0	0	0.0		
	Married	11	100.0	53	100.0	36	100.0		
	Widow/separated	0	0.0	0	0.0	0	0.0		
8.	**Residence**								
	Rural	4	36.4	6	11.3	34	94.4	χ^2 = 60.607** (p = 0.000)	df= 6
	Semi-urban	0	0.0	1	1.9	0	0.0		
	Urban	7	63.6	46	86.8	2	5.6		
9.	**Training regarding DOTS**								
	Yes	11	100.0	53	100.0	35	97.2	χ^2 = 1.796 (p = 0.407)	df= 2
	No	0	0.0	0	0.0	1	2.8		
10.	**If yes the duration**								
	Below 3	1	9.1	4	7.5	14	38.9	χ^2 = 23.604**	df= 6
	4 - 5	6	54.5	29	54.7	11	30.6		

	6 – 7	1	9.1	18	34.0	7	19.4	(p = 0.001)	
	Above 8	3	27.3	2	3.8	4	11.1		
11	**Years of experience**								
	Below 3	1	9.1	3	5.7	12	33.3	$\chi2 =$ 14.939** (p = 0.005)	df= 6
	4 – 6	7	63.6	44	83.0	20	55.6		
	Above 6	3	27.3	6	11.3	4	11.1		
12.	**Cases of DOTS Therapy**								
	Below 5	3	27.3	10	18.9	9	25.0	$\chi2 =$ 13.119* (p = 0.011)	df= 4
	6 – 10	8	72.7	41	77.4	18	50.0		
	Above 10	0	0.0	2	3.8	9	25.0		

Note;;@=Not Significant
* = Significant at 0.05 level
**= significant at 0.01 level.

The above table shows that there was a significant association between knowledge with DOTS providers with religion, educational status, occupation, family income, residence, duration of training, and years of experience significant at 0.01 level and DOTS providers' age, gender and cases of DOTS therapy were significant at 0.05 level.
There was no significant association between other socio-demographic variables like marital status and training regarding DOTS among DOTS providers.

Discussion
The findings of the study revealed that out of 100 DOTS providers majority (53%) have moderate level knowledge, and 36 per cent had adequate knowledge and very few participants (11%) had inadequate knowledge regarding prevention of transmission of tuberculosis.
A similar cross sectional observational community based study was conducted among 136 DOTS providers, in Raipur; Chattisgarh. Simple random sampling technique was adopted. Structure questionnaire was used to collect the data. The result of the study was that majority (55.15%) of DOT providers had moderate knowledge, (41.18%) had adequate knowledge and very few participants (3.67%) had inadequate knowledge. It concluded that there was a need to ensure 100% coverage of modular training and a time to time refresher training and supportive supervision was needed [12].
There was a significant association between knowledge with DOTS providers with religion, educational status, occupation, family income, residence, duration of training, and years of experience being significant at 0.01 level and DOTS providers' age, gender and cases of DOTS therapy were significant at 0.05 level.
A similar study was conducted among 150 DOTS providers, in Chattisgarh. Knowledge score of DOT providers was significantly associated with age, gender and job duration of DOT providers [13].

Conclusion
A Majority of the DOTS providers were having moderate knowledge regarding the prevention of transmission of tuberculosis and demographic variables were statistically significant and hence it can be concluded that there should be improved awareness regarding importance of prevention of tuberculosis transmission by providing information regarding the usage of masks, proper disposal of sputum, sputum cup disinfection, proper usage of medications, maintenance of personal hygiene, and also various services to be made available to screening in order to improve the health of the people.

Recommendations
- A similar study could be conducted on a larger sample.
- A similar study can be conducted to assess the knowledge on prevention of transmission of tuberculosis among general population.
- A similar study can be conducted to assess the knowledge and attitude towards prevention of tuberculosis transmission.
- The study can be replicated in different community settings.
- Information booklet and manuals can also be prepared and distributed to the community about the prevention of tuberculosis transmission.
- Based on the findings of study, continuous health education, training and rigorous supervision of DOTS providers by National TB Programme. RNTCP is required in more intense fashion.
- Training must be done before a person become a part of RNTCP and training Programme of DOTS provider is essential every 6 month to keep them updated.
- The practice of DOTS provider should be supervised by higher authority more frequently so that actually treatment is provided in direct observation.
- A positive collaboration between RNTCP and other health sector like private health care setting and NGO"S are also recommended.

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