



A Cross sectional Study to access Knowledge of Tuberculosis in Healthcare Workers in Tertiary Care Hospital, India

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Abstract

Introduction: Tuberculosis is a preventable and treatable disease but still is second most common cause of death among infectious diseases in India. But in a country like India, early diagnosis of active cases are still an area of difficulty. Early diagnosis and management by knowledgeable and skilled healthcare workers (HCWs) are key in addressing this health issue. Tuberculosis (TB) is a one major public health problem in India, thus assessment of knowledge is essential to plan, implement, and evaluate advocacy and may improve the case detection rate.

Material and Method: A cross-sectional study was conducted in National Institute of Medical Sciences and Research, Jaipur, Rajasthan, India. A questionnaire was given to 150 healthcare workers including 75 doctors, 50 nursing staff and 25 technicians. The responses were then analysed.

Result: The total number of respondents was 150, 75 were doctors, 50 were nursing staff and 25 were technician. Study population consisting of 66.66% male and 33.33% female. All participants were over 15 years old and more than half of them (65.32%) were within 30-50 years. About 96% were residing in rural areas. Most of the patients belong to 30-49 years (38.66%) with 35% males and 23% of female in this category. Among 150 healthcare workers, doctors were well aware of tuberculosis, but knowledge of nurses and technicians were slightly lacking. Although 90% and 80% of nursing staff and technicians respectively knew that pulmonary tuberculosis is contagious. 67.33 % of healthcare workers were of rural area, out of which 88% are technicians and 98% are nursing staff. 60% of doctors belong to urban area.

Conclusion: In conclusion, after assessing data doctors are well aware of knowledge regarding tuberculosis, but nursing staff and technicians lack sufficient knowledge. They are still in need of continuing programs to educate them regarding control and prevention of this disease. Initiative should be taken in each and every hospital to start RNTCP sensitization program at regular intervals. Thus improved knowledge on tuberculosis of healthcare workers will contribute to better management of this disease and will help in long term plan to eradicate tuberculosis from India.

Keywords: Tuberculosis, knowledge, healthcare workers, infection, nursing staff, doctors, technicians.

Introduction

Tuberculosis is a preventable and treatable disease but still is second most common cause of death among infectious diseases in India¹. Early diagnosis of tuberculosis and prompt management leads to effective control of tuberculosis. But in a country like India, early diagnosis of active cases are still an area of difficulty. Early diagnosis and management by knowledgeable and skilled healthcare workers (HCWs) are key in addressing this health issue².

The effectiveness of DOTS is determined by health-seeking behaviors of patient, which is related to patients' knowledge of TB, health education, demographic characteristics, and traditional beliefs. These are important for treatment compliance and thus treatment success rate.^{3,4}

Various Studies done previously observed that knowledge score was low among the illiterate, females, rural residences, and youngest age group. Also, this disease had a significant impact on social relations when there is stigma, discrimination, and several misconceptions that contribute to poor adherence to treatment^{5,6,7}

Tuberculosis (TB) is a one major public health problem in India, thus assessment of knowledge is essential to plan, implement, and evaluate advocacy and may improve the case detection rate.

There are very few studies in our country regarding assessing the knowledge and awareness and practice among healthcare workers. This study seeks to assess these parameters.

India contributes to one-fourth of world tuberculosis patients. Thus a study done by Acharya et al¹³ showed that adequate knowledge among doctors and nursing staff is a must to combat the burden of tuberculosis. Healthcare workers are the key population in every program for successful Tuberculosis control.

The objective of this study is to assess knowledge and health-seeking practice associated factors toward pulmonary tuberculosis among healthcare workers. The results will help in identifying

difficulties and limitations and capacities for enhancement of appropriate interventions for improvement.

Material and Method

Study Design, Setting and Population

This cross sectional study was done among 150 HCWs working in tertiary care centre of Rajasthan. The study was conducted during period of one year from 1st September 2018 to 31st august 2019. Among 150 health care workers, 50 were doctors, 65 were nursing staff and 35 were technical staff.

This study was not submitted for approval of ethical committee, as this study did not involve any risk to participants and only involve study on knowledge, awareness and practice.

Survey design and scoring system

Data was collected using an anonymous structured questionnaire developed in English. After explaining the survey's purpose and the objectives of the study, the questionnaire was distributed among HCWs and collected the study questionnaires from them once they were filled. The survey was designed to collect Knowledge information concerning TB including TB microbiology and epidemiology, transmission, diagnosis, treatment and infection prevention and control. The questionnaire was developed by reviewing questionnaires in the literature^{8,9,10,11} and the WHO guidelines for TB KAP surveys¹² but was tailored for the our particular tertiary care centre and the study objectives.

A scoring system was developed to score the KAP responses. Incorrect/inappropriate or uncertain (don't know) responses were given a 0 score, while 1 point was given for choosing the correct/appropriate answer;

Statistical analysis was done using ratio and proportion. Chi square test was used to find significance of knowledge about TB among male and female patients.

Result

Characteristics of study participants

The total number of respondents was 150, 75 were doctors, 50 were nursing staff and 25 were technician.

Study population consisting of 66.66% male and 33.33% female. All participants were over 15 years old and more than half of them (65.32%) were within 30-50 years. About 96% were residing in rural areas.

Knowledge of patients regarding TB

Table 1: significant difference in knowledge about TB was found between male and female respondents

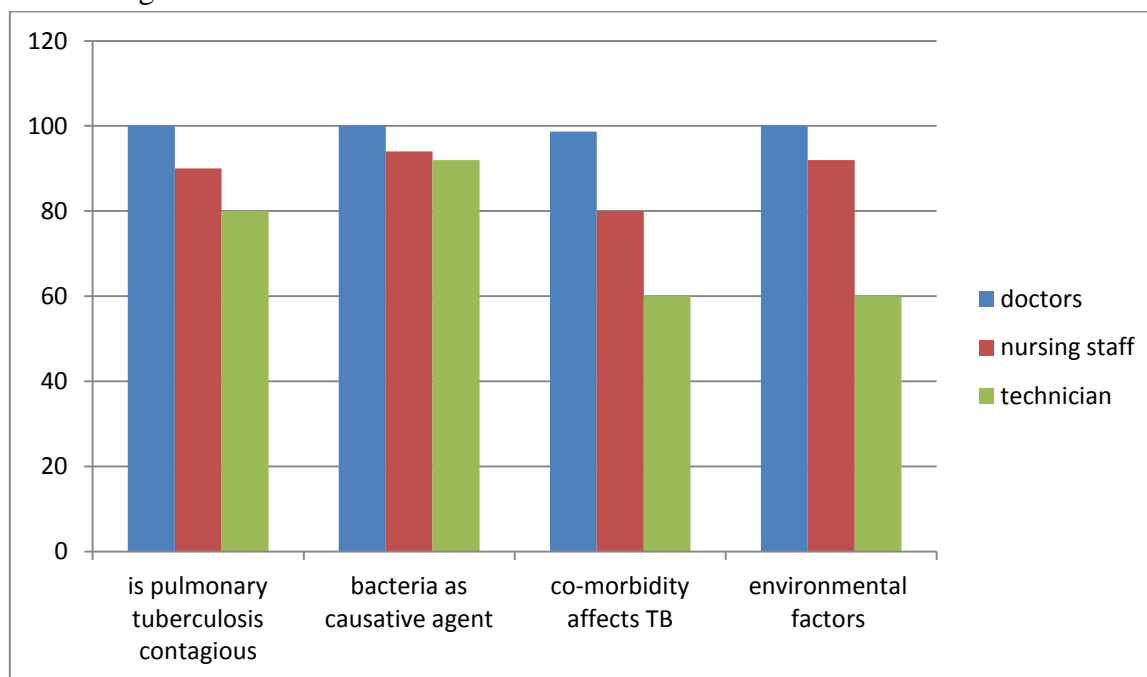
AGE	MALE (100)	FEMALE (50)	PERCENTAGE (%)
<30	15	10	16.66
30-49	35	23	38.66
40-49	29	11	26.66
>49	21	6	18.02
Total	100	50	100

Most of the patients belong to 30-49 years (38.66%) with 35% males and 23% of female in this category.

TABLE 2: Knowledge about tuberculosis

	Doctors (75)	Nursing staff (50)	Technical staff (25)
Is pulmonary tuberculosis contagious			
Yes	75	45	20
No	0	5	5
Is there a causative agent of tuberculosis?			
Yes	75	47	23
No	0	3	2
Environmental factors contributes in tuberculosis			
Yes	75	46	15
No	0	4	5
If comorbid conditions affect tuberculosis infection			
Yes	74	40	15
No	1	10	10

Figure 1: Knowledge about tuberculosis in healthcare workers



Among 150 healthcare workers, doctors were well aware of tuberculosis, but knowledge of nurses and technicians were slightly lacking. Although 90% and 80% of nursing staff and technicians respectively knew that pulmonary tuberculosis is contagious. Overcrowding was considered as

major risk factor as environmental factor. Hypertension was considered as most important risk factor although technicians (60%) were least to know about it. All were aware that bacteria is causative agent of tuberculosis in doctors (100%, nursing staff (80%) and technicians (60%).

Table 3: Knowledge regarding causative agent of tuberculosis

Causative agent	Doctors (75)	Nursing staff (50)	Technical staff (25)
Bacteria	65	32	14
Protozoa	7	10	8
Viruses	3	6	1
No causative agents	0	2	2

Table 4: Knowledge regarding environmental factors in pulmonary tuberculosis

Factors	Doctors (75)	Nursing staff(50)	Technical staff (25)
Illiteracy	12	8	2
Overcrowding	45	25	12
Poverty	10	9	7
Unemployment	8	8	4

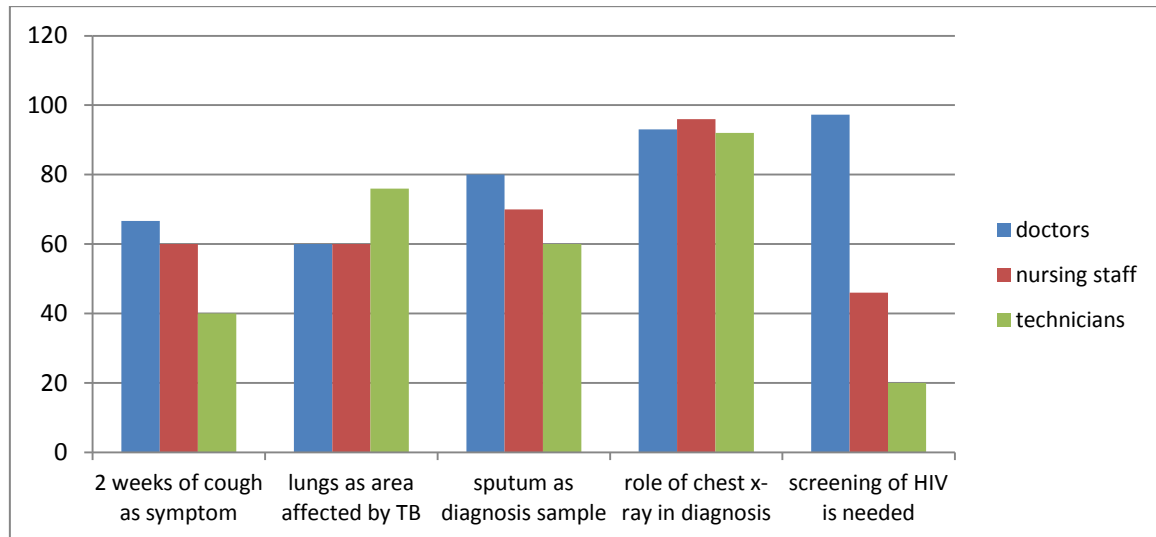
Table 5 Knowledge regarding co morbid conditions responsible for pulmonary tuberculosis infection

Co morbid conditions	Doctors (75)	Nursing staff (50)	Technician (25)
Chronic alcoholism	4	10	4
HIV	12	9	3
Hypertension	55	25	15
Diabetes mellitus	4	6	3

Table 6 Knowledge regarding clinical presentation and diagnosis of tuberculosis (n=150)

	Doctors (75)	Nursing staff (50)	Technician (25)
Symptoms of tuberculosis			
2 weeks cough	50	30	10
Diarrhea	5	2	4
Evening rise of temperature	8	10	8
Weight loss	12	8	3
Areas affected by tuberculosis			
Cervical lymphnode	15	8	2
Intestine	10	7	3
Nails	5	5	1
Lungs	45	30	19
Diagnosis of pulmonary tuberculosis is by which sample			
Sputum	60	35	15
Urine	1	5	3
BAL	10	1	1
Blood	4	9	6
Role of chest x-ray in diagnosis			
Yes	70	48	23
No	5	2	2
Screening of HIV needed in a Patient of tuberculosis			
Yes	73	23	5
No	2	27	20

Figure 2: Knowledge regarding clinical presentation of tuberculosis

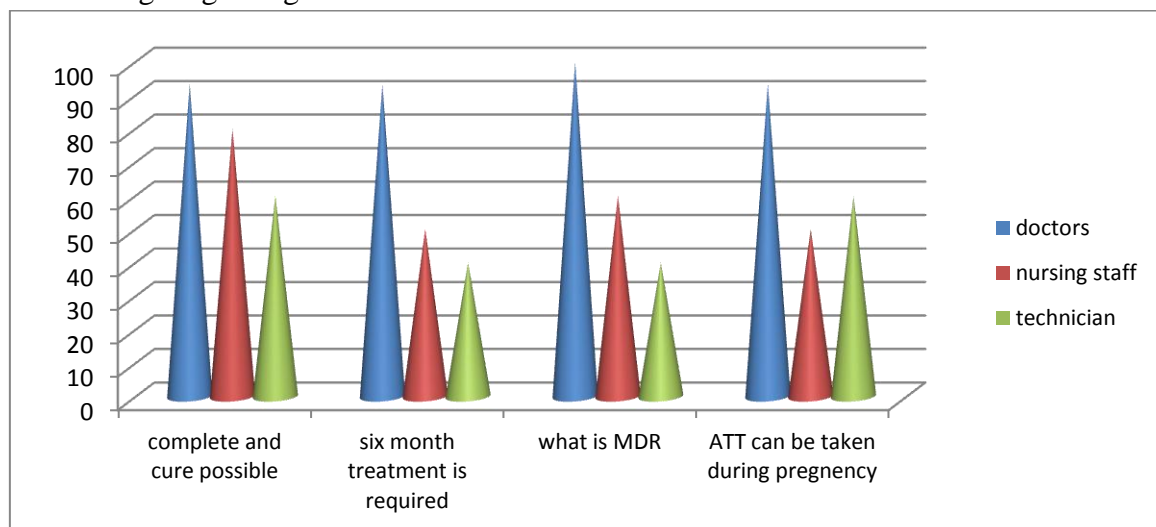


All were aware about clinical presentation of tuberculosis, but only 20% technician and 46 % nursing staff were aware that HIV screening was needed in tuberculosis patients.

Table 7: Knowledge regarding treatment of tuberculosis

	Doctors (75)	Nursing staff (50)	Technician (25)
Complete and free cure possible?			
Yes	70	40	15
No	5	10	10
Duration of treatment			
Six weeks	0	5	5
Six months	70	25	10
Two months	0	5	3
Nine months	5	10	7
What is MDR			
Mono dose response	0	10	10
Mini dose response	0	10	5
multi drug resistance	75	30	10
ATT can be taken during pregnancy			
Yes	70	25	15
No	5	25	10

Figure 3: Knowledge regarding treatment of tuberculosis

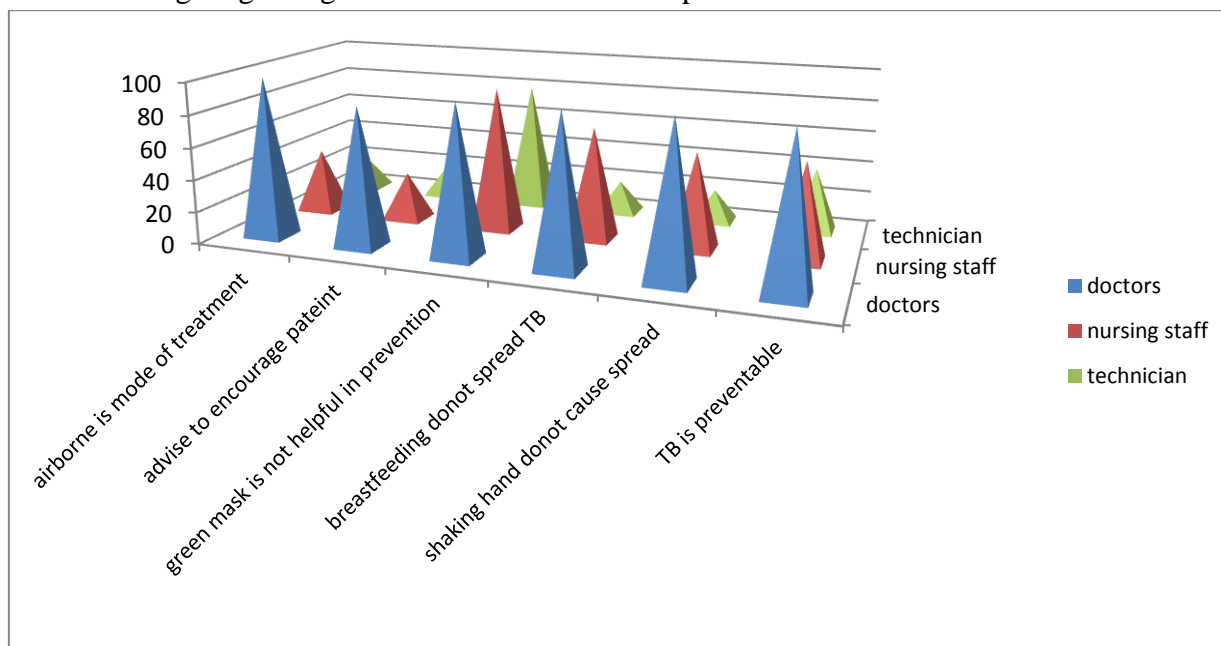


All doctors were aware about treatment of tuberculosis. 40% technicians and 50% nursing staff knew about six month course for tuberculosis. Technicians (40%) and nursing staff (60%) were aware about MDR.

Table 8: Knowledge regarding mode of transmission and prevention of tuberculosis

	Doctors (75)	Nursing staff(50)	Technician (25)
Mode of transmission			
Insect borne	0	10	10
Air borne	75	20	5
Water borne	0	10	5
Food borne	0	10	5
Advise to family members of patient			
Isolate the patient	10	35	20
Encourage patient to use personal protective measures	65	15	5
Is green mask helpful in preventing tuberculosis in health care worker			
Yes	5	5	2
No	70	45	20
Breast feeding spreads tuberculosis			
yes	5	15	20
no	70	35	5
Can it be spread by shaking hands			
Yes	4	35	20
No	71	15	5
Is tuberculosis preventable			
Yes	70	30	10
no	5	20	15

Figure 4: Knowledge regarding mode of transmission and prevention



When knowledge regarding mode of transmission was assessed then 93.33% doctors were aware about it. Technicians (20%) and nursing staff (70%) were aware that breastfeeding does not spread tuberculosis and it is not spreads by hand shaking.20% technicians and 30% nursing staff advised family members to isolate there patients.

Table 9: Distribution of study cases according to demographic area (n= 150)

	Rural	Urban
Doctors (75)	30	45
Nursing staff (50)	49	1
Technical staff (25)	22	3
Total	101	49

67.33 % of healthcare workers were of rural area , out of which 88% are technicians and 98% are nursing staff. 60% of doctors belong to urban area.

Discussion

This study was done on 150 health care workers including doctors, nursing staff and technicians to access knowledge, attitude and practice towards tuberculosis.

Majority of participants (74%) showed bacteria as causative agent of tuberculosis. Our study showed a higher proportion of the participants (93%) were aware of contagious nature of pulmonary tuberculosis which is similar to study done by Acharya et al¹³. Overcrowding was mentioned by majority of HCWs as method of transmission. Co-morbid conditions which are highly associated with tuberculosis were correctly identified as hypertension (963%) as major cause followed by chronic alcoholism (14%) and least as Diabetes mellitus (8%).

Knowledge regarding clinical presentation and diagnosis of tuberculosis, HCWs correctly mentioned that cough more than 2 weeks (60%) as major criteria followed by evening rise of temperature (17.3%) and least as diarrhea (7%).

On analyzing of knowledge, 83.3% of HCWs knew that tuberculosis is curable and free cure is available for this disease. Most of them correctly knew (95%) that duration of treatment is six months. 76% of them knew the correct term of MDR and 73% of them knew that ATT can be taken during pregnancy.

On analyzing data on knowledge regarding transmission and prevention of tuberculosis, 66.6% of HCWs were aware that it is air borne disease. 73.33 % of participants knew that tuberculosis is preventable and 86% stated that green surgical mask could not provide protection against tuberculosis. High level of awareness was observed regarding tuberculosis transmission from breast feeding and shaking hands. 91% and 73.33% of participants knew that shaking hands and breast feeding respectively causes tuberculosis.

In various studies conducted in African countries, showed the dual burden of HIV infection and tuberculosis, due to limited capacity of healthcare workers in diagnosis and management of

tuberculosis. There are gaps in knowledge and skills regarding tuberculosis which should be studied and addressed continuously through professional development programmes¹⁴. But factors like limited access to programs, financial problems, poor infrastructure and mismatch between educational needs and implemented programs causes these gaps not to fill. Therefore there is a dire need to fill these gaps if we need to improve outcome of tuberculosis¹⁵.

Health care workers are at increased risk of infection from tuberculosis. Various Studies reported that the knowledge regarding preventive measures, screening and treatment rates were found to be low among them^{16,17}. A study done on nursing staff who were involved in management of patients suffering from tuberculosis by Cabral V.K. et al¹⁹ showed that distance learning course resulted in significant improvement in knowledge regarding the same.

A review done by Wu S. et al²⁰ showed that most studies which were done only assess the acquisition of knowledge, but the domain of behavior change is less assessed. A positive attitude and proper knowledge is needed regarding infection control practice of tuberculosis.²¹ Another study done showed that lack of social support acts as a environmental barrier for control of Tuberculosis. Therefore community participation and proper involvement of health care workers are essential to control infection of tuberculosis²². Factors like lack of knowledge, community skills and poor interpersonal relationship among healthcare workers causes negative effect on well being of patients who are on long term therapy with anti tubercular drugs²³. Nursing professionals have a crucial role in tuberculosis management as they take care of patients suffering from tuberculosis and also supervise DOTS distribution. Improving awareness on knowledge in preventive and curative care helps in better management of patient, this can be achieved through clinical experience and continuing professional education^{24,25}.

Study conducted in Northern Israel reported that health care workers have a low rate to be screened using purified protein derivatives for tuberculosis despite them educating regarding importance of screening¹⁸.

Conclusion

In conclusion, after assessing data doctors are well aware of knowledge regarding tuberculosis, but nursing staff and technicians lack sufficient knowledge. They are still in need of continuing programs to educate them regarding control and prevention of this disease. Initiative should be taken in each and every hospital to start RNTCP sensitization program at regular intervals. As 70% and 80% nursing staff and technicians respectively believed in isolation of tuberculosis patients, the knowledge about social stigma should be taught to them as they play a major role in care of the patient.

Thus improved knowledge on tuberculosis of healthcare workers will contribute to better management of this disease and will help in long term plan to eradicate tuberculosis from India

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