Original Research Article

Awareness of tuberculosis among nurses

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Abstract

Background: Tuberculosis is a leading infectious killer disease worldwide. Early diagnosis and prompt treatment on the part of the health care providers is essential for TB control. Their knowledge, attitude and practice have an impact on the tuberculosis patients regarding compliance to treatment and follow up. There are limited studies in India assessing the knowledge of nursing professionals regarding TB transmission, prevention and control. This study seeks to assess the same.
Materials and methods: A cross-sectional study was conducted at SRM Medical College and Research Centre, Potheri, Kanchipuram district. A pre-tested self-administered questionnaire was given to 224 nursing staff. The responses were then analyzed.
Results: A high proportion (71.80%) of awareness was found regarding the causation of TB by bacterium, air-borne method of spread and over-crowding being a significant risk factor. A lesser proportion of the participants were aware that TB does not spread by breast feeding (54.9%) or hand shaking (33%) and that ATT should be continued during pregnancy. Levels of knowledge on the preventable nature of TB infection (56%) and the availability of ATT were also found to be low.
Conclusions: This study indicates the need for addressing the gaps regarding the knowledge and transmission of TB among the nursing care professionals. Nursing professionals still are in need of continuing educational programs regarding treatment and control of TB. Improved knowledge on TB will thus contribute to effective TB control and in the long term, will help India achieve the goal of End TB.

Key words

Tuberculosis, Nursing, Awareness, Infectious disease.

Introduction

Tuberculosis is one of the leading infectious killer diseases at the world level. It had caused approximately 1.8 million deaths in 2015. Early diagnosis and prompt management is one of the key principles for an effective control of Tuberculosis. But in situations where resources are scarce, early diagnosis through active case finding still remains an area of difficulty. Hence there are various barriers regarding the effective implementation of a successful program to control tuberculosis [1]. India alone accounts for around one-fourth of the global burden of tuberculosis. With regards to this, a study reported that an adequate level of knowledge and a positive outlook among doctors and nurses are essential to combat the increasing burden of TB [2].

Various strategies have been implemented in TB control using varying case detection methods. In settings such as Africa, clinic-based strategies were found to be more effective regarding the control of TB, since active outreach programs and home based case finding had concerns of stigma [1].

Health care workers are one of the key populations to be addressed in any program for successful TB control. This is due to many reasons. In studies conducted in African countries, the limited capacity of health care workers in diagnosis and management of TB add on to the dual burden of HIV infection and TB and thus worsen the situation. There still exist gaps in knowledge and skills regarding Tuberculosis. These gaps still need to be studied and addressed using continuous professional development programs [3]. But bottle-necks regarding this were found to be factors such as limited access to programs, financial constraints, poor infrastructure and mismatch between the educational needs and implemented programs. These gaps need to be addressed if outcomes in TB need to be improved [4].

In addition, health care workers are also a high risk group for latent Tuberculosis infection (LTBI). Studies have reported that the knowledge regarding preventive therapy, willingness to undergo screening and actual treatment rates was found to be low among health care workers [5, 6]. Another study conducted in Northern Israel has reported that Health care workers have a low rate of being screened for Tuberculosis using purified protein derivatives. These low rates persisted despite educating them regarding screening for TB [7].

Various interventions have been performed to address the gaps in knowledge and competencies of health care workers regarding the management of tuberculosis. In a study by Cabral V.K., et al. [8] (2017) distance learning courses imparted to nurses involved in care of tuberculosis patients resulted in a significant improvement in the knowledge regarding the same. Another study reported that there was a wide variation in the knowledge regarding prevention and transmission of tuberculosis among the pediatric age group. But the improvement in knowledge alone was not sufficient to overcome all the barriers identified by the health care workers [9].

Similar results have been reported elsewhere as well. A systematic review by Wu S., et al. [10] (2017) mention that most studies conducted only assess the acquisition of knowledge by the workers. The domain of behaviour change appeared to be far less assessed. Furthermore, a positive attitude along with adequate knowledge is needed regarding infection control practices in TB [11]. Another study has found out that adverse attitudes of health care workers, lack of societal support were detrimental and functioned as environmental barriers for control of TB. Community participation along with involvement of health care workers was found to be essential for the control of TB [12]. Knowledge, attitude and practice of health care workers is essential during the treatment and follow-up of TB patients as well. Lack of knowledge, poor interpersonal relationship and communication skills were found to be having negative effects

on tuberculosis patients on long term therapy with anti-tuberculous drugs [13].

Among health care workers, nursing professionals were found to have a crucial role in TB control. Implementing and supervising DOTS are also the major activities of nurses. Improving the level of awareness on knowledge in preventive and curative care of TB was found to be enhanced by expanding the scope of nursing professionals. This was expected to be achieved through continuing professional education and clinical experience [14, 15]. In addition to medical education, qualitative studies involving health care workers are also expected to identify the lacunae and thus reduce treatment default [16].

There are limited studies in India assessing the knowledge, attitude and practice of health care workers such as nursing professionals regarding TB, its transmission and control. This study seeks to assess the same.

Objectives

- To evaluate knowledge related to transmission, prevention and treatment of tuberculosis among nurses.

Materials and methods

The study was a cross sectional study, conducted in the SRM Medical College Hospital and Research Center, Potheri, Kanchipuram.

The study population included nursing staff working in the study setting for at least 1 year. All the study participants were selected randomly from the entire list of nursing staff, obtained from the nursing superintendent's office.

The study was not submitted for approval of ethical committee, as the study was only Knowledge, Attitude and Practice (KAP) study and did not involve any additional risk to the participants. All the necessary administrative approvals to conduct the study were obtained from appropriate administrative authority.

The data was collected by a self-administered questionnaire. The questionnaire included all the key aspects of the Tuberculosis, including details about causative agent, mode of transmission, screening and diagnosis, availability of treatment and nature of it. The knowledge about mode of transmission and prevention has also been discussed.

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Data was also represented using appropriate diagrams like bar diagram, pie diagram and box plots.

Results

A total of 209 subjects were included in the final analysis. Among the study population, 71.80% nurses aware that pulmonary tuberculosis is contagious. The majority of 79.90% nurses have the correct knowledge about the causative agent of tuberculosis. The most common environmental risk factor for tuberculosis as per 81.80% of study participants was overcrowding. The most important co morbid condition reported was hypertension is 66.50%. Followed by HIV infections, chronic alcoholism, and diabetes mellitus was 15.30%, 10.50% and 7.70% respectively (**Table – 1**).

Only 9.1% of the nurses had reported cough more than 2 weeks as the presenting symptoms and another 14.40% and 10.5% have reported evening rise of temperature and weight loss as the presenting symptom. But majority (66.6%) have reported diarrhoea to be the most common presenting symptom. Majority (78.90%) of the participants could identify nails are usually not affected by Tuberculosis. The proportion of nurses, who reported sputum as appropriate sample to diagnose tuberculosis was 96.20%. The proportion of nurses, reporting X-ray has a role in TB diagnosis and TB patients do need HIV screening was 59.8% and 67.5% respectively (**Table – 2**).

Table - 1: Knowledge about the risk factors and causative agent (N=209).

	Frequency	Percentages
Is pulmonary tuberculosis contagious		
Yes	150	71.80%
No	59	28.20%
Is there a causative agent of tuberculosis if so, what is it		
Bacteria	167	79.90%
No causative agent	20	9.60%
Protozoa	9	4.30%
Virus	13	6.20%
Environmental factors in pulmonary tuberculosis		
Illiteracy	5	2.40%
Over crowding	171	81.80%
Poverty	27	12.90%
Unemployment	6	2.90%
Co morbid condition responsible for pulmonary tuberculosis infection, Except		
Chronic alcoholism	22	10.50%
Diabetes mellitus	16	7.70%
HIV infections	32	15.30%
Hypertension	139	66.50%

Table - 2: Knowledge about clinical presentation and diagnosis of TB (N=209).

	Frequency	Percentage
All the following are symptoms of pulmonary tuberculosis except		
2 weeks cough	19	9.10%
Diarrhoea	138	66.00%
Evening rise of temperature	30	14.40%
Weight loss	22	10.50%
Areas affected by tuberculosis, except		
Cervical lymph node	9	4.30%
Intestines	12	5.70%
Lungs	23	11.00%
Nails	165	78.90%
Diagnosis of pulmonary tuberculosis is by which sample		
Blood	6	2.90%
Sputum	201	96.20%
Urine	2	1.00%
Is there a role of chest x-ray in diagnosis pulmonary tuberculosis		
Yes	125	59.80%
No	84	40.20%
Does a tuberculosis patient need HIV screening		
Yes	141	67.50%
No	68	32.50%

Only 54.1% of the nurses were aware that TB can be completely cured and the proportion aware about availability of free treatment was only 56%. The proportion reporting duration of treatment as 6 months was 78% and 0nly 59.8% of the nurses reported TB patients have to be advised high protein diet. The correct expansion of MDR TB was done by 88.50% of the subjects and 56% reported that ATT cannot be taken during pregnancy. The proportion of nurses reporting OCP and barrier contraception as ideal method was 65.60% and 34.0% (**Table – 3**).

Table - 3: Knowledge regarding treatment of Tuberculosis in study participants.

	Frequency	**Percentages**
Is a complete cure of tuberculosis possible?		
Yes	113	54.10%
No	96	45.90%
Availability of free treatment for tuberculosis		
Yes	117	56.00%
No	92	44.00%
Duration of treatment for pulmonary tuberculosis		
Six months	163	78.00%
Six weeks	13	6.20%
Two months	27	12.90%
Two weeks	6	2.90%
What kind of diet has to be advised for tuberculosis patient		
High protein diet	125	59.80%
Low fat diet	10	4.80%
Low protein diet	39	18.70%
Low salt diet	35	16.70%
What is MDR?		
Minimal drug response	4	1.90%
Mono drug resistance	20	9.60%
Multi drug resistance	185	88.50%
ATT can be taken during pregnancy		
Yes	92	44.00%
No	117	56.00%
What type of contraception is advised during tuberculosis treatment		
Barrier	71	34.00%
Contraceptive implant	1	0.50%
OCP	137	65.60%

The proportion of subjects correctly reporting Airborne route as the mode of transmission was 87.60%. Only 56% reported TB is preventable, and 84% reported they will Encourage the patient to use personal protective measures. About 59.3% of the subjects reported, that the decontamination of the infected material can be done by washing with hot water. The proportion of subjects reporting TB to be spread by breast feeding was 34.9% and 66% reported that HIV can not spread by mouth to mouth contact. The proportion of subjects reporting N95 mask to be protective against tuberculosis was 68.4% and 33% reported that TB can be spread by shaking hands (**Table – 4**).

Table - 4: Knowledge mode of transmission and prevention of TB.

Mode of transmission and prevention	Frequency	Percentage
Modes of pulmonary tuberculosis transmission		
Air borne	183	87.60%
Food borne	1	0.50%
Insect borne	3	1.40%
Water borne	22	10.50%
Is TB preventable		
Yes	117	56.00%
No	92	44.00%
How will your advice family members in preventing infection from the patient		
Encourage the patient to use personal protective measures	168	80.40%
Isolate the patients	41	19.60%
Is a health care worker protected from pulmonary TB by wearing the green mask		
Yes	94	45.00%
No	115	55.00%
Decontamination of infected materials used by infected person can be done by		
Bleach has to be used	49	23.40%
Ordinary water	36	17.20%
Washing with hot water	124	59.30%
Is tuberculosis spread by breast feeding		
Yes	73	34.90%
No	136	65.10%
Can HIV infection spread by mouth to mouth contact		
Yes	138	66.00%
No	71	34.00%
Is N95 mask protective against the spread of pulmonary tuberculosis infection?		
Yes	143	68.40%
No	66	31.60%
Can pulmonary tuberculosis spread by shaking hand		
Yes	69	33.00%
No	140	67.00%

Discussion

A higher proportion of the participants (71.80%) were aware that pulmonary tuberculosis is contagious similar to other studies [2]. Similarly majority of the participants identified the causative agent of TB to be bacterial. Regarding the methods of transmission of the disease, over-crowding was correctly mentioned as a significant risk factor by 81.8% of the participants. Furthermore, co-morbidities such as chronic alcoholism, hypertension and diabetes were correctly identified to be highly associated with TB.

With regards to the clinical presentation and diagnosis of TB, participants correctly mentioned that cough for more than 2 weeks, weight loss and evening rise of temperature were indicative of pulmonary tuberculosis. Most participants also exhibited correct knowledge that nails were not affected by tuberculosis in contrast to organs such as cervical lymph node, intestines and lungs. Almost 96.20% of the participants mentioned that sputum sample is used for the diagnosis of TB. With regards to chest X-ray, the response was more equivocal, with 59.80% participants reporting Chest X-ray to be useful

for diagnosis of TB and the rest being in the negative. Similarly, only 67.50% of the participants reported that TB patients need concomitant screening for HIV.

On analysis of knowledge regarding TB, only 54.1% of the participants mentioned that TB is curable. A similar 56% only knew that there are treatment options for TB. Most participants (78%) correctly mentioned that the duration of Anti-tuberculous treatment to be 6 months. Around 59.8% participants correctly mentioned that TB patients need a high protein diet. 88.5% of the participants were aware of the term multi-drug resistant TB. But more than half of the participants (56%) mention that ATT cannot be taken during pregnancy. Oral contraceptive pills were stated as the prescribed method during ATT by 65.6% of the participants while, 34% mention barrier methods as the method of choice.

When the knowledge regarding the transmission and prevention of TB was assessed, 87.6% participants were aware that TB is air-borne and 80.4% stated that they will advise the family members regarding protective measures. Washing with hot water was mentioned as the preferred methods of decontamination by 59.3% of participants. A little more than half of the participants (56%) were aware that TB is preventable and a similar proportion reported that wearing a green surgical mask did not offer protection from TB. But 68.4% reported that wearing an N95 mask was protective from TB spread.

Low levels of awareness were found to be regarding TB transmission through breast feeding and shaking hands. Almost a third (34.9%) of the participants mentioned that TB was transmitted through breast milk. Similarly, 33% participants reported that TB spreads by shaking hands. In addition, 66% reported that HIV infection was spread from mouth to mouth contact.

Hence, most of the participants are aware of the causative agents of TB. But only a third was aware of the cardinal symptoms. Further, lack of knowledge regarding transmission of TB such as with ATT intake during pregnancy, transmission through breast feeding and shaking hands is identified. Knowledge regarding the curable nature of TB infection and the availability of free treatment also is a need.

Conclusion

In conclusion, there still exist gaps regarding the transmission and control of TB if effective control of TB needs to be achieved. Nursing professionals still are in need of continuing educational programs regarding treatment and control of TB. RNTCP sensitization program needs to be undertaken among nursing staff in each and every hospital on a mass scale. As 19% nursing staff questioned about social isolation, the knowledge about the social stigma should be imparted to the nursing staff as they play a major role in the counselling of tuberculosis patients. 'A VISIT TO RNTCP CENTER' is point of emergence from this study. Improved knowledge on TB will thus contribute to effective TB control and in the long term, will help India achieve the goal of End TB.

References

1. Kerrigan D, West N, Tudor C, Hanrahan CF, Lebina L, Msandiwa R, et al. Improving active case finding for tuberculosis in South Africa: informing innovative implementation approaches in the context of the Kharitode trial through formative research. Health Res Policy Syst., 2017; 15(1): 42.
2. Acharya PR, D'Souza M, Sahoo RC. Tuberculosis knowledge and attitude in aspiring doctors and nurses - Is it time for our TB teaching methods to evolve? Indian J Tuberc., 2017; 64(1): 20-5.
3. Feldacker C, Jacob S, Chung MH, Nartker A, Kim HN. Experiences and perceptions of online continuing professional development among clinicians in sub-Saharan Africa. Hum Resour Health, 2017; 15(1): 89.

4. Feldacker C, Pintye J, Jacob S, Chung MH, Middleton L, Iliffe J, et al. Continuing professional development for medical, nursing, and midwifery cadres in Malawi, Tanzania and South Africa: A qualitative evaluation. PLoS One, 2017; 12(10): e0186074.
5. Pathak V, Harrington Z, Dobler CC. Attitudes towards preventive tuberculosis treatment among hospital staff. Peer J., 2016; 4: e1738.
6. Mirtskhulava V, Whitaker JA, Kipiani M, Harris DA, Tabagari N, Owen-Smith AA, et al. Determinants of tuberculosis infection control-related behaviors among healthcare workers in the country of Georgia. Infect Control Hosp Epidemiol., 2015; 36(5): 522-8.
7. Taubman D, Titler N, Edelstein H, Elias M, Saliba W. Providing detailed information about latent tuberculosis and compliance with the PPD test among healthcare workers in Israel: a randomized controlled study. J Epidemiol Glob Health, 2013; 3(4): 253-60.
8. Cabral VK, Valentini DF, Jr., Rocha MVV, de Almeida CPB, Cazella SC, Silva DR. Distance Learning Course for Healthcare Professionals: Continuing Education in Tuberculosis. Telemed J E Health, 2017; 23(12): 996-1001.
9. Arscott-Mills T, Masole L, Ncube R, Steenhoff AP. Survey of health care worker knowledge about childhood tuberculosis in high-burden centers in Botswana. Int J Tuberc Lung Dis., 2017; 21(5): 586-91.
10. Wu S, Roychowdhury I, Khan M. Evaluating the impact of healthcare provider training to improve tuberculosis management: a systematic review of methods and outcome indicators used. Int J Infect Dis., 2017; 56: 105-10.
11. Engelbrecht M, Janse van Rensburg A, Kigozi G, van Rensburg HD. Factors associated with good TB infection control practices among primary healthcare workers in the Free State Province, South Africa. BMC Infect Dis., 2016; 16(1): 633.
12. Mabunda JT, Khoza LB, Van den Borne HB, Lebese RT. Needs assessment for adapting TB directly observed treatment intervention programme in Limpopo Province, South Africa: A community-based participatory research approach. Afr J Prim Health Care Fam Med., 2016; 8(2): e1-7.
13. Ibrahim LM, Hadjia IS, Nguku P, Waziri NE, Akhimien MO, Patrobas P, et al. Health care workers' knowledge and attitude towards TB patients under Direct Observation of Treatment in Plateau state Nigeria, 2011. Pan Afr Med J., 2014; 18 Suppl 1: 8.
14. Nagata Y, Kato T. [Expanding the role of the nursing profession in tuberculosis medical services]. Kekkaku., 2013; 88(12): 815-25.
15. Yukselturk N, Dinc L. Knowledge about anti-tuberculosis treatment among nurses at tuberculosis clinics. Int J Nurs Pract., 2013; 19(1): 47-53.
16. Kizub D, Ghali I, Sabouni R, Bourkadi JE, Bennani K, El Aouad R, et al. Qualitative study of perceived causes of tuberculosis treatment default among health care workers in Morocco. Int J Tuberc Lung Dis., 2012; 16(9): 1214-20.