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**Awareness about Tuberculosis and RNTCP-DOTS guidelines among nurses working in a rural medical college in Haryana**

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**ABSTRACT**


**Introduction:** Nurses play a vital role in the management of tuberculosis patients. Nurses working in a variety of healthcare settings carry the bulk of the work in TB prevention, care and treatment. With effective investment in their training, nurses represent a formidable force to help defeat TB and MDR-TB. Not many studies assessing the knowledge of nurses regarding TB have been done in India. The objective of the present study was to study the awareness about tuberculosis and RNTCP-DOTS among the Nurses working at BPSGMC (W), Khanpur Kalan, Sonapat. **Methods:** A cross sectional study was conducted among 228 nurses working in a tertiary care hospital. A pre-tested structured questionnaire was used to assess their awareness on TB disease, RNTCP and DOTS guidelines. Awareness was assessed using scores and analyzed by frequencies & percentages using Microsoft Excel 2010. **Results:** The results of this study identified both strong and weak points regarding awareness of nurses about the detection and treatment of tuberculosis as recommended under the national programme. Taking 'correct replies to 75% of the questions' as a criterion for 'good' awareness, only 22.8% nurses had Good awareness while 60.5% had a satisfactory level of awareness. **Conclusion:** The study revealed inadequacies in the knowledge of tuberculosis amongst nurses. RNTCP programme should be the part of regular teaching activity of all medical colleges and hospitals

**Key words:** Nurses, DOTS, RNTCP, Awareness

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## INTRODUCTION

India is the highest TB burden country in the world in terms of absolute number of incident cases that occur each year. During the year 2013, an estimated 9 million people all over the world and a 2,600 (1,800-3,700) thousand people in India, developed TB. Patients with infectious pulmonary tuberculosis disease can infect 10-15 persons in a year (1). In India, Revised National Tuberculosis Programme (RNTCP) was introduced in 1993, it has expanded rapidly over the years and since March 2006 it covers the whole country. Under RNTCP, besides the concept of DOTS (directly observed treatment, short course), much emphasis has been placed on health education and counselling of tuberculosis patients (2). The long-term goal for Human Resource Development for DOTS is to reach and sustain a situation where staff at different levels of the health system has the skills, knowledge, and attitudes necessary to successfully implement and sustain DOTS activities. (3)

Besides doctors and other paramedical staff, nurses play a vital role in the management of tuberculosis patients. Nurses' role in the WHO DOTS strategy cover the entire spectrum of activities i. e. detection of cases, administering and monitoring drug regimens, ensuring a regular supply of medicines, and recording and reporting the relevant data. Failure in any of these activities is likely to contribute to treatment failure and to the development of drug resistance. Because of their frontline presence in all health-care facilities and their diversity of skills, nurses are the natural ally in the fight against TB. Hence, a thorough knowledge regarding TB disease, RNTCP, and the current guidelines of WHO DOTS strategy, is crucial for nurses in health care settings like tertiary care hospitals (4)

In the era of HIV/AIDS and TB, overall nursing competence in detection of tuberculosis, control and care is crucial. Nurses working in a variety of healthcare settings carry the bulk of the work in TB prevention, care and treatment. With effective investment in their training, nurses represent a formidable force to help defeat TB and MDR-TB. Since nurses are in direct contact with patients, they play a vital role in the effective implementation of the RNTCP by educating and supporting patients, detecting side-effects of medication and motivating patients to ensure adherence to and completion of treatment.

On searching the data, it was observed that studies regarding awareness and knowledge of nurses about tuberculosis are lacking in India. With this background, the present study was conceptualized

to evaluate the awareness of nurses about this disease of huge public health importance ie to assess the knowledge regarding TB, its control strategies and current DOTS guidelines amongst the nurses of a tertiary hospital of Haryana, India.

## METHODS

This hospital based, cross sectional study was conducted in February 2016, in a tertiary care hospital. This institute has a separate Department of Pulmonary Medicine & 30 beds are allotted exclusively for tuberculosis patients. Teaching and training of medical students & paramedical workers is carried out in this hospital, besides operational and clinical research in the field of tuberculosis.

Nurses from all departments, such as medicine, surgery, gynaecology etc were contacted to answer the questionnaire. Given the small number of targeted population, the questionnaire was sent to all the 234 nurses working in this hospital, based on the information from the hospital employee data base. A multiple-choice type, pre-tested structured questionnaire focusing on awareness about case finding, management of tuberculosis patients as per RNTCP-DOTS strategy was developed. This questionnaire was self-administered and on an anonymous basis. A pilot study was carried out on 10 randomly selected nurses to test the appropriateness of the questionnaire. The questionnaire was modified accordingly as per the results of the pilot study. Informed consent was obtained from all the participants. Information was sought on participants' age, their work experience, and if they have had any exclusive training on tuberculosis. The questionnaire contained questions on this disease like clinical symptoms and modes of transmission of TB, awareness about DOTS strategy, current RNTCP program guidelines i.e. knowledge about number of sputum specimens to be examined, categories and phases of treatment, who can be a DOT provider etc.

A total of 234 nurses were contacted out of which 228 participated in the study. All the nurses were qualified and were permanent employees of the hospital. Complete anonymity was ensured. Six nurses who were not willing to participate or who could not be contacted after three visits were excluded.

Each question was allotted 1 mark for correct answer. Level of knowledge was calculated on the basis of score obtained by the participant. The score was graded as:

POOR : <50% correct answers, SATISFACTORY: 50-75%, GOOD : >75% correct answers.

Data was fed into Microsoft Excel and compiled and analyzed using SPSS version 20. Frequencies & percentages were calculated.

**RESULTS**

A total of 234 nurses were contacted, out of which 228 returned the completed questionnaire. The response rate was 97.4%. There were 210 (92.1) females and 18 (7.8) males in the study group. Most of the study participants (56.5%, F=120, M=9) were in the age group of 20-29 years. (Table 1) Amongst the nurses, most of them had done GNM course whereas a few of them had done BSc Nursing. 84.2% nurses had a job experience of less than 5 years, whereas 6.5% had more than 20 year's experience to their credit. (Table 2) None of

them had attended any on-the-job training on Tuberculosis & RNTCP guidelines. Majority of the study participants (n=190, 83.3%) obtained a score of 50% and above [Table no 3].

The maximum number of correct answers was for questions regarding transmission of TB (95.1%), full form of RNTCP (91.7%) and DOTS (87.7%), BCG vaccine (89%) and the location of DOTS centre (78.9%) in the hospital. Incorrect answers were for the questions regarding the cause of reduced cases of TB (16.6%), chemoprophylaxis for neonate of a Tuberculosis positive mother (20.1%), definition of sputum positive TB (26.7%), safe method of sputum disposal (39.9%) and who can be a DOTS provider (40.7%). (Table no 4)

**Table 1 Distribution of study participants as per age- group (n=228)**

Age (years)	Males(%)	Females(%)	Total(%)
20-29	9(6.9)	120 (93.0)	129(56.5)
30-39	5(6.5)	71(93.4)	76(33.3)
40-49	1(11.1)	8(88.8)	9(3.9)
>50	3(21.4)	11(78.5)	14(6.1)
total	18(7.8)	210(92.1)	228(100.0)

**Table 2 Distribution of study participants as per years of experience (n=228)**

Years of Experience	Number(%)
0-5	192(84.2)
6-10	21(9.2)
11-15	-
16-20	-
21-25	5(2.2)
26-30	1(0.4)
31-35	4(1.7)
>35	5(2.2)
total	228(100.0)

**Table 3 Level of Awareness of participants (n=228)**

Level of Awareness	No. of participants(%)
poor (<50% correct responses )	38(16.6)
Satisfactory(50-75%)	142(62.2)
Good(>75%)	52(22.8)
total	228(100.0)

**Table 4: Percentage of correct answers given for each question by all the participants (n=228)**

Question number	Correct answer No. (%)
1. What is the full form of RNTCP	207(91.7)
2. What is the full form of DOTS	200(87.7)
3. Who cannot be a DOTS provider among the following?	93(40.7)
4. What is the cause of reduced cases of TB?	38 (16.6)

5. What is the chemoprophylaxis for neonate of a tuberculosis infected lactating mother	46 (20.1)
6. Mark the correct multidrug regimen for tuberculosis	99 (43.4)
7. Which out of these is sputum positive TB	61 (26.7)
8. What does tuberculin positive mean	152 (66.6)
9. Define a TB case	93 (40.7)
10. What is the correct advice for tuberculin positive mother	118 (53.6)
11. Most appropriate Test to diagnose pulmonary TB	157 (68.8)
12. True regarding BCG vaccine is	203 (89.0)
13. DOTS centre in our hospital is located at	180(78.9)
14. Mode of transmission of TB is	217 (95.1)
15. Safe method of disposal of sputum is	91 (39.9)

## DISCUSSION

An important component of STOP TB strategy is to involve all cadres of health care providers so as to ensure international standards in TB care.<sup>(5)</sup> Nurses constitute an essential and integral part of a health care system. Most parts of tuberculosis treatment is domiciliary, but patients are admitted to the hospital if they develop complications during initiation of treatment or side effects of antituberculosis treatment or during initiation of MDR TB treatment. Nurses are not only involved in management of patients and administration in the wards, but they are also responsible for providing health education to the patients about the disease.<sup>(6)</sup> Nurses also take care of educating and supporting patients with TB, detecting medication side effects, ensuring adherence to and completion of treatment and educating and supporting patients. The patients' many queries about the disease such as mode of spread, prevention, and protection of family members, are often directed at the nurses as they are more readily available than the physicians.<sup>(2)</sup>

With the introduction of the RNTCP more emphasis has been placed on health education, patient counseling and directly observed treatment. Consequently, the responsibilities of nurses and other paramedical staff have also increased many-fold.<sup>(7)</sup>

The results of this study identified both strong and weak points regarding awareness of nurses about the detection and treatment of tuberculosis as recommended under the national programme. Taking correct replies to 75% of the questions asked as a criterion for 'good' awareness, only 22.8% nurses had 'good awareness' while 60.5% had a 'satisfactory' level of awareness (correct responses to 50-75% questions). In a study carried out among Nurses working in Delhi, 40.2% of nurses in tuberculosis and 10.7% of nurses in the general hospital had satisfactory awareness.<sup>(2)</sup> The

present study showed that substantial numbers of nurses still have inadequate knowledge regarding the cause of reduced cases of TB (16.6 %), chemoprophylaxis for neonate of a tuberculosis positive mother (20.1%), sputum positive TB (26.7%), sputum disposal safe method(39.9%) and DOTS provider (40.7%). (Table 4) However, there is reasonably good awareness about mode of transmission of TB (95.1%), full form of RNTCP (91.7%) and DOTS (87.7%), BCG vaccination (89.0%) and the location of DOTS centre (78.9%) in the hospital.

In a study done by Singla et al on nurses showed that a substantial number of nurses had inadequate knowledge regarding various aspects of TB disease, causative factors, its diagnosis and treatment. As regards the mode of spread, 94% TB hospital nurses and 78.6% General hospital (GH) nurses gave inhalation as the answer<sup>(2)</sup>, whereas 95.1% nurses gave the correct answer in the present study.

In the RNTCP there are very clear guidelines about the durations and dosages of the drugs to be administered. About 56.6% nurses did not know the correct multi-drug regimen followed in Directly Observed Treatment Short-course chemotherapy. The knowledge about TB, RNTCP and new DOTS guidelines was 28.0%, 63.4% and 19.5% respectively among nurses in a study conducted in a tertiary care hospital in South India.<sup>(4)</sup>

In RNTCP, sputum examination is the most reliable method of diagnosis of TB instead of X-ray. 68.8% nurses correctly answered that sputum is the most appropriate test to diagnose tuberculosis in the present study, whereas it was mentioned as the most important investigation by 32.9% TB nurses and 15.2% GH nurses in the Delhi nurses study.<sup>(2)</sup>

Only 39.9% nurses correctly identified the safe method of sputum disposal in the present study.

Burning of sputum was recommended by 85% TB nurses and 71.8% GH nurses, whereas 7.3% TB and 19.8% GH nurses advised burying it in the ground.<sup>(2)</sup> Similar deficits in knowledge were observed in other studies carried out in different parts of the world. Studies carried out in other countries like Turkey & Russia also show that the nurses did not have adequate knowledge about TB.<sup>(8,9)</sup> Akin S *et al* reported in their study on Knowledge of Turkish nursing & midwifery students that the nursing students had poor knowledge about TB.<sup>(8)</sup>

In Russia, health care worker incorrectly identified difficulty in swallowing, eye pain, joint pain & muscle pain as symptoms of TB.<sup>(9)</sup> Another Russian study stated that it could be transmitted by contact with objects of personal hygiene like linen & eating utensils.<sup>(10)</sup> Another study done in Ghana - a high burden African country reported that healthcare providers' lack of knowledge led to incorrect advice being given to the patients.<sup>(11)</sup> In a study conducted by N Yükseltürk and L Dinc in Turkey, 77% of nurses scored good pertaining to the knowledge about anti-TB treatment. Their mean score (18.5) was above the average score.<sup>(12)</sup> Another important observation was that there is lack of on-the-job training or continuous medical education programmes for the nurses in the hospitals. Higher education level, longer clinical experience at TB clinics, receiving in-service

education and undergoing diagnostic tests for TB increases the level of knowledge of the nurses. These findings indicate the importance of education and clinical experience, and suggest a need for training and continuing education for the newer, younger and less educated nurses.

Protocols for training programmes for nurses should be developed, aiming at strengthening knowledge, attitude and practices among nurses. A study done in Thailand also showed that TB training attendance was directly linked to providers' levels of knowledge as well as good care & practice.<sup>(13)</sup> This will lead to fewer defaults and failures and improved cure rates.<sup>(2)</sup> Trained nurses would not only help in improving case detection and case holding, but would also help in passing on the required health education to the patients.

## CONCLUSION

The study revealed inadequacies in the knowledge of tuberculosis amongst nurses. These results obtained provide valuable information for RNTCP programme managers. We must train and mobilize the nursing workforce to confront TB effectively as their ability to diagnose and manage tuberculosis infection has important public health implications. RNTCP programme should be the part of regular activity of all medical colleges and hospitals.

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