

## ORIGINAL ARTICLE

# A Study to Assess the Knowledge of Staff Nurses Regarding DOTS Therapy in View of the Preparation of Informational Booklet at Tertiary Care Hospital, Amritsar, Punjab, India

<sup>1</sup>Kulwinder Kaur, <sup>2</sup>Manpreet Kaur

## ABSTRACT

**Background:** Tuberculosis remains a worldwide public health problem despite the fact that the causative organism was discovered more than 100 years ago and highly effective drugs and vaccines are available making tuberculosis a preventable and curable disease. Under the Revised National Tuberculosis Control Programme (RNTCP), directly observed short course treatment (DOTS) is a comprehensive strategy for tuberculosis control and has proven effective in controlling tuberculosis on a mass basis.

**Material and methods:** This study was conducted on 200 staff nurses working at tertiary care hospital during morning and evening shifts. A quantitative approach was used with research design as nonexperimental with the descriptive survey. Sampling Technique was Convenient sampling. Data was collected using directly observed short therapy course (DOTS) therapy knowledge questionnaire which was prepared by the principal author from an extensive review of the literature and validated from the experts of nursing, community medicine, and pulmonary medicine physicians.

**Statistical analysis:** The result showed that 64% of staff nurses were having knowledge below average, 29.5% falls in average group, and only 6.5% were having good knowledge regarding DOTS. On further analysis, Socio-demographic variables were found to be non-significant with the level of knowledge of staff nurses.

**Conclusion:** It was concluded that overall knowledge score among staff nurses was relatively deficient in spite of widespread dissemination of information, keeping in view the analyzed data and considering the knowledge deficiency, an Informational booklet regarding the information on DOTS therapy was developed by the principal author which was further extensively reviewed by the experts of nursing and medical college and then distributed among all the staff nurses.

**Keywords:** Directly observed short course treatment (DOTS), Revised National Tuberculosis Control Programme (RNTCP), Staff nurses, TB cases

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## INTRODUCTION

Tuberculosis is a specific infectious disease caused by *M. tuberculosis* and affects every part of the body.<sup>1,2</sup> It was observed that tuberculosis killed nearly everyone it infected. Tubercle bacillus spreads through droplet infection when people who have active TB infection coughs or sneezes. Most infections are asymptomatic and latent, but about one in ten latent infections eventually progresses to active disease which, if left untreated, kill more than 50% of those so infected.<sup>3-5</sup> In 2007, RNTCP has consistently achieved treatment rate of more than 85% and case detection close to the global target.<sup>6,7</sup> However, in 2007 RNTCP for the first time has achieved the global target of 70% case detection while maintaining the treatment success rate of more than 85%. Directly observed short therapy course (DOTS) strategy cover the entire spectrum of activities, including advocating for political commitment, case detection, administering and monitoring drug regimens, ensuring a regular supply of medicines, and standardizing recording and reporting systems.<sup>8,9</sup> Failure in any of these activities is likely to contribute to treatment failure and the development of drug resistance. Nurses working in primary health-care settings are often the first to identify and manage suspected TB cases; this early identification is essential to ensuring a high level of case detection and is a cornerstone of TB control. Strengthening initiatives should not just target nurses working in specialist TB services, but the generalist nurses as well. In the era of HIV / AIDS, TB is often a co-infection, and overall nursing competence in detection, control, and care is crucial. Also, further competencies are required in dealing with multi-drug resistance (MDR) and extensively drug-resistant tuberculosis (XDR-TB). The overall aim of TB-control is full compliance rate of DOTS therapy, for this, there is a need to assess the knowledge of staff nurses and give them

<sup>1,2</sup>Assistant Professor

<sup>1,2</sup>Sri Guru Ram Das College of Nursing, Vallah, Sri Amritsar, Punjab, India

**Corresponding Author:** Kulwinder Kaur, Assistant Professor, Sri Guru Ram Das College of Nursing, Vallah, Sri Amritsar, Punjab, India, e-mail: preeti\_walia85@yahoo.com

information regarding DOTS therapy so they can deliver effective and competent care to patients suffering from tuberculosis and community at large.<sup>9-11</sup>

## MATERIALS AND METHODS

In present research study, knowledge of staff nurses regarding DOTS therapy was assessed through "DOTS therapy knowledge questionnaire for staff nurses" with part A and part-B which was designed from an extensive review of the literature by the principal author and further validated by experts of nursing and medical institute. It was then distributed among 200 staff nurses working at morning and evening shifts in Tertiary care hospital, Amritsar, Punjab. Permission was taken from the medical superintendent of the hospital to collect data, and the subjects were explained about the objectives, activities, and duration of their involvement before taking written informed consent from each study subject. Research approach used was the quantitative approach. Research design selected was nonexperimental with a descriptive survey. Sampling technique was convenient sampling. Nurses working at morning and evening shift were included. The tool consists of (a) socioeconomic demographic profile including age (in years) professional education, the current area of experience, professional experience (in years), habitat, mass-media exposure regarding DOTS therapy, In-service education attended regarding

DOTS therapy; (b) DOTS therapy knowledge questionnaire for staff nurses consisting of 30 questions. For each correct answer, one mark was given, and for each incorrect response, the zero marks were awarded. Reliability of the tool was estimated by split half method (i.e., odd-even split). Karl Pearson correlation formula was employed to estimate reliability using the split-half method, i.e.,  $r = \frac{\sum(x-x)(y-y)}{\sqrt{\sum(x-x)^2 \sum(y-y)^2}}$ . Reliability was found to be 0.76. Hence, the tool was considered reliable.

## STATISTICAL ANALYSIS

To begin with, the data was entered in a master sheet, for tabulation and statistical processing. In order to find the relationship, the data was tabulated, analyzed and interpreted by descriptive and inferential statistics using SPSS version 10.0 of Microsoft Windows.

Informational booklet containing all the relevant information on DOTS therapy was developed from an extensive literature review, consultation, discussion, and validation from the experts of nursing, community medicine and pulmonary medicine physicians on DOTS therapy. It was then distributed among all the staff nurses to enhance their knowledge.

## RESULTS

The findings are presented in Tables 1 to 3.

**Table1:** Sociodemographic profile of staff nurses

Characteristics	f (%)	N = 200
<i>Age (in years)</i>		
21–25	117 (58.5)	Mean ± S.D = 27.30 ± 6.23 Range = 21–45 years
26–30	31 (15.5)	
31–35	25 (12.5)	
36–40	17 (08.5)	
41–45	10 (05.0)	
<i>Professional Education</i>		
G.N.M.	152 (76.0)	
B.Sc. (N)	38 (19.0)	
A.N.M	10 (05.0)	
<i>Areas of experience</i>		
Surgical-ward	34 (17.0)	
Medical-ward	29 (14.5)	
Gyne ward	28 (14.0)	
Pediatric ward	27 (13.5)	
Intensive ward/Units	26 (13.0)	
Chest/ TB ward	22 (11.0)	
Ortho ward	18 (09.0)	
Eye/ENT	8 (04.0)	
Out patient department (OPD)	8 (04.0)	
<i>Professional experience (in years)</i>		
1–5	143 (71.5)	Mean ± S.D = 4.74 ± 5.45
6–10	28 (14.0)	
11–15	14 (07.0)	

Contd...

<i>Contd...</i>		
<i>Characteristics</i>	<i>f (%)</i>	<i>N = 200</i>
> 15	15 (07.5)	
<i>Habitat</i>		
Urban	56 (28.0)	
Rural	92 (46.0)	
Semi-urban	52 (26.0)	
<i>Mass media exposure regarding DOTS therapy</i>		
Television	98 (49.0)	
Magazine	47 (23.5)	
Books	35 (17.5)	
Internet	20 (10.0)	
<i>In-service education regarding DOTS therapy</i>		
No	137 (68.5)	
Yes	63 (31.5)	

Table 1 shows that a maximum number of the subjects (58%) were belonging to the age group of 21 to 25 years. Staff nurses with general nursing and midwifery (GNM) as professional education were 76%. Staff nurses who were working in the general wards account for 83%. More than half of the subjects had professional experience of 1 to 5 years (71%). Staff nurses living in the semi-urban area were 46%. Nearly half of the staff members got information regarding DOTS therapy from television.

Table 2 shows that 64% of staff nurses were having knowledge below average, 29.5% were falling in average group and only 6.5% were having good knowledge. Mean knowledge score was found to be 13.7 with a standard deviation of 2.27.

Table 3 shows the level of knowledge of staff nurses were having no association with socio-demographic characteristic and they were found to be non-significant with  $p > \text{or} = 0.05$ .

**Table 2:** Level of knowledge of staff nurses regarding DOTS therapy

<i>Level of knowledge (mm = 30)</i>	<i>f (%) of score</i>	<i>N = 200</i>
Excellent (> 22)	–	Mean $\pm$ S.D = 13.71 $\pm$ 2.27
Good (18–22)	13(06.5)	Range = 8–19
Average (15–17)	59(29.5)	
Below average (< 15)	158(64.0)	

**Table 3:** Association of level of knowledge of staff nurses with demographic characteristics.

<i>Characteristics</i>	<i>Mean <math>\pm</math> S.D</i>	<i>Df</i>		<i>F-value</i>	<i>p-value</i>
		<i>B/W grp</i>	<i>Within grp</i>		
<i>Age( in years)</i>					
$\leq 25$	13.71 $\pm$ 2.15	1	198	0.045 NS	1.96
$\geq 26$	13.70 $\pm$ 2.67				
<i>Professional education</i>					
Degree	14.11 $\pm$ 2.54	1	198	1.25 NS	1.96
Diploma	13.61 $\pm$ 2.19				
<i>Areas of experience</i>					
General ward	13.81 $\pm$ 2.35	2	197	1.29 NS	0.27
Out patient department (OPD)	13.75 $\pm$ 1.38				
Intensive ward/units	13.04 $\pm$ 1.84				
<i>Professional experience (in years)</i>					
1–5	13.60 $\pm$ 2.10	2	197	0.54 NS	0.58
6–10	14.04 $\pm$ 3.19				
>10	13.90 $\pm$ 2.02				
<i>Habitat</i>					
Rural	13.68 $\pm$ 1.96	2	197	0.07 NS	0.92
Urban	13.64 $\pm$ 2.45				
Semiurban	13.81 $\pm$ 2.59				

Contd...

Contd...

Characteristics	Mean $\pm$ S.D	Df		F-value	p-value
		B/W grp	Within grp.		
Mass media exposure regarding DOTS therapy					
Formal	13.88 $\pm$ 2.13	1	198	0.71 NS	1.96
In Formal	13.63 $\pm$ 2.32				
<i>In-service education</i> regarding DOTS therapy					
Yes	14.13 $\pm$ 2.25	1	198	1.77 NS	1.96
No	13.51 $\pm$ 2.25				

NS = Non significant  $p > \text{or} = 0.05$  \* Significant  $p < 0.05$ 

## DISCUSSION

Tuberculosis is still a national problem in India, while a cure exists and prevention is possible. It still remains among the leading causes of morbidity and mortality in our country. Because of this, the government of India has embarked on the DOTS approach.<sup>5</sup> However, imparting basic knowledge about the disease to staff nurses is still believed to be a cheaper strategy that may lead to greater success in the completion of therapy.

In present research study, knowledge of staff nurses regarding DOTS therapy was assessed through "DOTS therapy knowledge questionnaire for staff nurses" and information booklet was distributed among the staff nurses working at tertiary care hospital, Amritsar, Punjab.

A nonexperimental descriptive survey design was used to assess the knowledge of 200 samples (staff nurses) regarding DOTS therapy. The findings of the study are discussed under the following headings:

- Sociodemographic characteristics.
- Level of knowledge of staff nurses regarding DOTS therapy.
- Association of the level of knowledge with socio-demographic characteristics of staff nurses regarding DOTS therapy.

### Sociodemographic Characteristic

A maximum number of the subjects (58%) belong to the age group of 21 to 25 years. Staff nurses with GNM as professional education were (76%). Staff nurses who were working in general wards account for (83%). More than half of the subjects had professional experience of 1-5 years (71%). Staff nurses living in the semi-urban area were (46%). Staff nurses exposed to television regarding DOTS therapy were (49%). A similar study was conducted at the National Institute of Tuberculosis and Respiratory Diseases, New Delhi. The study also concluded variables such as age, gender, a qualification which did not affect the total knowledge score.<sup>12</sup>

### Level of Knowledge of Staff Nurses Regarding DOTS Therapy

The present study confirms that the overall knowledge score of (64%) of staff nurses was below average (score  $< 15$ ) which was relatively less. This shows that there was a lack of information among the staff nurses regarding DOTS therapy in spite of the widespread dissemination of information. The present findings are consistent with another study conducted by Sharma N about awareness of tuberculosis among nurses working in a tuberculosis hospital and general hospital in Delhi, India. Results showed that only 40.2% of tuberculosis nurses had a satisfactory level of awareness and there was no effect of increasing age or years of experience on the level of awareness.<sup>13</sup> Another similar study conducted by B Martin on knowledge of DOTS and its management practices among Health workers in Africa also revealed gross inadequacies in DOTS knowledge and management practices among Health workers.<sup>14</sup> Shehzadi R also conducted a cross-sectional survey to assess the knowledge of general practitioners regarding DOTS in Pakistan. Eighty-eight subjects were selected by convenience sampling method. The data were collected by a structured questionnaire after taking verbal consent. Results showed that only 3% of the subjects had knowledge about DOTS. The study concluded severe deficiencies in the management of tuberculosis by general practitioners of Pakistan. The study recommended that National Tuberculosis Control must take appropriate measures to educate and train the general practitioners.<sup>15</sup> Another study by Fatima S, Samuel K (2008) to assess the knowledge on DOTS among private and public general nursing staff in Oman. Two hundred and fifty-seven subjects were selected purposively, in which 154 were private general Nursing staff. Questionnaires were distributed to both groups. The study showed (37.7%) difference in knowledge of both the groups. The study concluded that there is a need to train general nursing staff on DOTS.<sup>16</sup>

## Association of the Level of Knowledge with Sociodemographic Characteristics of Staff Nurses regarding DOTS Therapy

In the present research study, it was concluded that socio-demographic variables have no significant association with the level of knowledge among staff nurses regarding DOTS Therapy. Such conclusions were also made by Sharma N in a study conducted on the awareness about tuberculosis among nurses working in a tuberculosis hospital and general hospital in Delhi, India which revealed that there was no effect of increasing age or years of experience on the level of awareness.<sup>12</sup>

The informational booklet was designed from an extensive review of the literature and validated from experts of nursing and medical institute. It was then distributed among all staff nurses. Harries AD conducted an experimental study to assess the effectiveness of an instructional module on tuberculosis control and DOTS to undergraduates nursing student in Malawi. One hundred and thirty-four undergraduate nursing student were selected randomly. Pre module and post-module assessment were done using a structured questionnaire. The result suggested a satisfactory increase in knowledge level (mean difference 46.6) of the subjects.<sup>17</sup> Clayton RR conducted a cluster randomized controlled study to assess whether adding a training intervention for clinic staff to the usual DOTS strategy would affect the outcomes of the tuberculosis treatment in primary care clinics in London. Sample selection of 2377 subjects was done randomly. Data collection was done by using an interview schedule. The results showed that the effect of the intervention was, an increase in successful treatment rates of 4.8 percent (95% confident interval: 5.5 to 15.2%. The study revealed, this is the first evidence from a randomized controlled trial on the effects of experiential, particularly training on tuberculosis outcomes in primary care facilities in a developing country.<sup>18</sup> Neeta Singla conducted a study to assess the effectiveness of multimodule training for healthcare professionals (HCP) at tuberculosis Education and Training Centre at Bengaluru. Thirty-two health care professionals were selected randomly. A self-administered questionnaire was used. HCP who attended more than one training event showed small but significant improvements over time in tuberculosis-related clinical practice behaviors. The result showed significant improvement (32%) in the knowledge of healthcare professionals regarding DOTS after attending the training programme. The study reported high levels of satisfaction, knowledge

improvement, and intention to change after each training event.<sup>19</sup>

## CONCLUSION

It was concluded that the knowledge level of staff nurses regarding DOTS therapy is relatively deficient. A multi-mode training intervention needs to be conducted in this regard. The first aspect of training was to familiarize the nurses regarding the information regarding DOTS therapy. An information booklet was thus prepared in concurrence with the data analysis regarding the deficit knowledge. Further study is ongoing regarding improvement over time in TB related treatment behavior by nurses.

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