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Research Article

Assessment of Knowledge on RNTCP and DOTS Guidelines Among Nurses of a Tertiary Care Hospital

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ABSTRACT

Background: India is the most populous country in the world and has one fourth of the global incident TB cases occur in India annually. 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. Nurses working in a variety of healthcare settings carry the bulk of the work in TB prevention, care and treatment. **Methodology:** This was a cross sectional study among 74 nurses. Structured self-administered questionnaire with ten questions was used for the study. **Results:** A large number of participants (70.3%) correctly mentioned that 2 sputum samples are collected for diagnosis. 73% of nurses responded correctly regarding how AFB specimen should be requested from the patient. Regarding the new drug Bedaquiline introduced for MDR-TB, 78.4% were aware of the drug. 83.8% had good knowledge about Designated microscopic centre. Most participants exhibited correct knowledge regarding the most common form of extra pulmonary TB; 71.6% opted TB of lymph nodes. 82.4% of the participants were aware of CBNAAT (Catridge Based Nucleic Acid Amplification Test). Many nurses (60.8%) correctly mentioned that family members cannot be DOTS providers. 51.4% of the study population opted giving INH for 6 months to child <3 years who are contacts of Tb patients irrespective of their BCG status. 67.6% correctly responded that Cotrimoxazole is an effective drug in TB-HIV co infection to reduce mortality and it was only 44.7 % in the study compared. **Conclusion:** A good proportion of nurses had satisfactory level of knowledge on RNTCP and DOTS. However, a small fraction of nurses falls into categories of Average and poor knowledge, implying that nursing professionals still need continuing educational programs regarding treatment and control of TB.

INTRODUCTION

Tuberculosis is an airborne infectious disease caused by Mycobacterium tuberculosis. It is a leading infectious killer disease worldwide. In 1997, The Government of India launched Revised National Tuberculosis Control Programme (RNTCP). In India, 1.9 million tuberculosis cases occur annually accounting for one fifth of the world's new tuberculosis cases and 2/3rd of cases in South East Asia region. And according to the WHO report 2022, India is still continuing at the top of the list of patients with Tuberculosis.

Early diagnosis and prompt management is essential for TB control. Among health care workers, nurses have a crucial role in Tb control[1]. Implementing and supervising DOTS are also the major activities of nurses. Improving the level of awareness on knowledge in prevention and treatment of Tb can be enhanced by continuing professional education and clinical experience. Their knowledge, attitude and practice have an impact on the tuberculosis patients regarding compliance to treatment and follow up. Inadequate knowledge lead to improper counselling of contents to the recipients. Tuberculous patients report to general hospitals and tuberculous hospitals. The occupational risks nurses are exposed to in their detection and care work with TB patient's points to the need to defend good practices and adapt them to health work conditions.

Recent studies suggest that misinformation and lack of updated data regarding knowledge about the disease also contributes to increased vulnerability of nurses towards Tuberculosis. But 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 with the objective of studying

awareness about tuberculosis and RNTCP-DOTS among the Nurses working at MOSC Medical College Hospital, Kolenchery.

MATERIALS AND METHODS

Study Design: Cross sectional study

Study Setting: MOSC Medical college, Kolenchery.

Study Subjects: Nurses of MOSC Medical college, Kolenchery.

Sample size is 74, calculated on the basis of prevalence of 57.6% obtained from the study done on "Knowledge, Attitude & Practices of Nurses Towards RNTCP and DOTS" By Kumar T D, Sharma A, K. Bharati.

Sample size was calculated using the following formula:

$$N=\frac{4PQ}{d^2}$$

Where N is the required sample size, P is prevalence and d is the allowable error.

Duration of study: The study was planned and executed over a period of one year. The period of data collection was two months.

Study tool: A self-administered questionnaire was developed for the study. The questionnaire has 10 basic questions on RNTCP which was used to assess the knowledge of nurses on the same.

Data Collection: Based on the objectives a structured questionnaire was made. This was distributed to all the study subjects included in the study and the filled up forms were collected. The questionnaire was distributed to the consenting participants. Each investigator approached 5 or 6 participants only. The process was completed for all the study participants over a period of two months.

Ethical Considerations: Informed consent was taken from the participants, the data was anonymised and confidentiality is strictly maintained.

Analysis: The data collected was entered into a master chart and analysed. Based on the analysis tables and charts were prepared.

Each study participant was given a score based on the number of correct responses – 1 point for a correct response and 0 for a wrong response. Maximum score is 10 and minimum is 0. Based on the scores, the nurses were grouped into different categories:

Table 1: Categorization of study participants based on score

SCORE	CATEGORY
7 – 10	Good (Level of knowledge satisfactory)
4 – 7	Average Knowledge
<4	Poor Knowledge

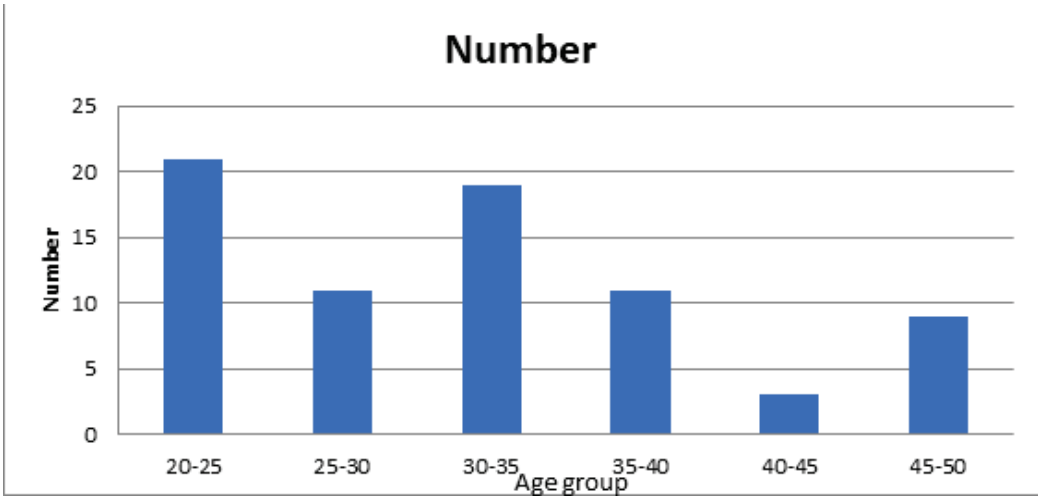

Figure 1: Age distribution of study subjects

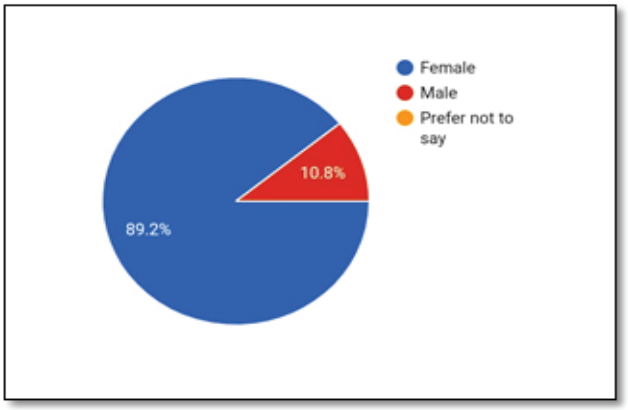

Figure 2: Gender distribution of study subjects

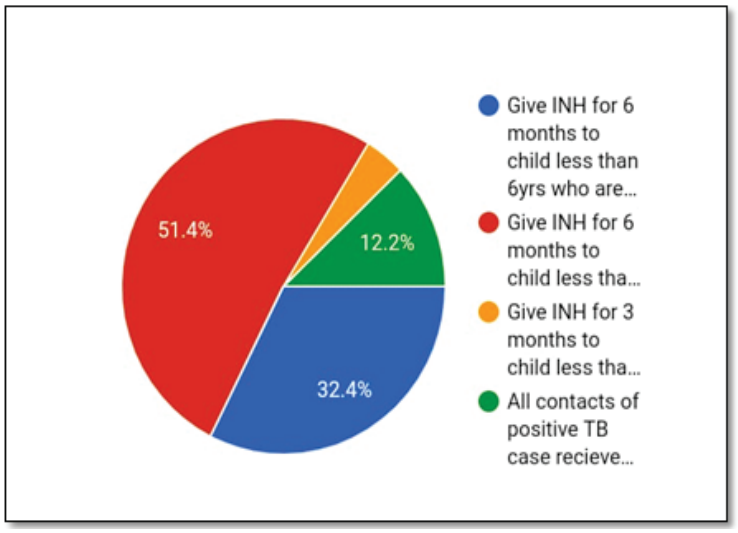

Figure 3 : Distribution of nurses responses on the correct INH regimen for children under 6 years who are contacts of TB patients.

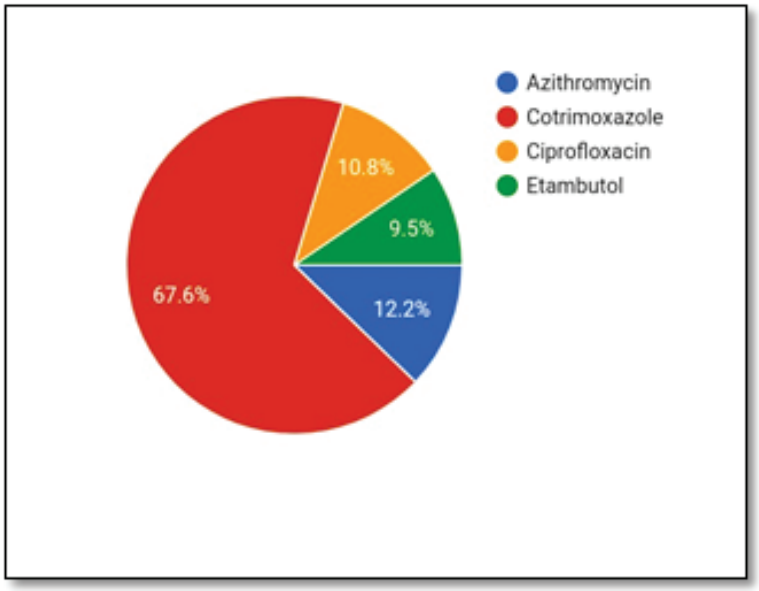

Figure 4: Knowledge on effective drug in TB-HIV coinfection to reduce mortality: Distribution of nurses recommen -dat ions for the most effective drug in reducing mortality in TB-HIV coinfection, with Cotrimoxazole being the correct answer.

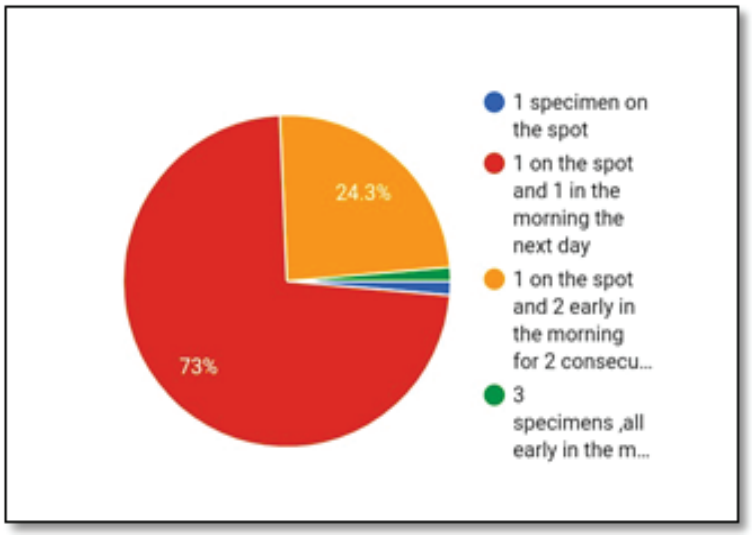

Figure 5: Knowledge on collection of AFB specimen: Distribution of nurses responses on the correct method for collecting AFB specimens.

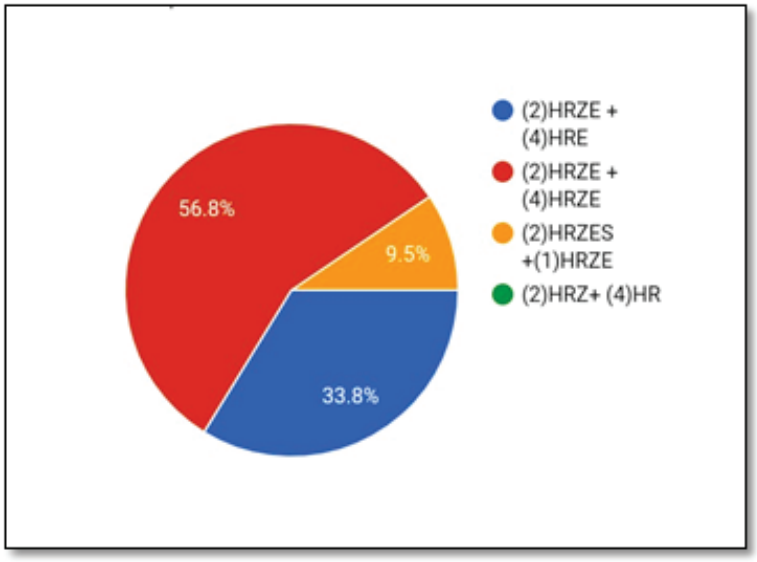

Figure 6: Knowledge on the current regimen followed by RNTCP: Distribution of nurses knowledge on the current TB treatment regimen under RNTCP guidelines.

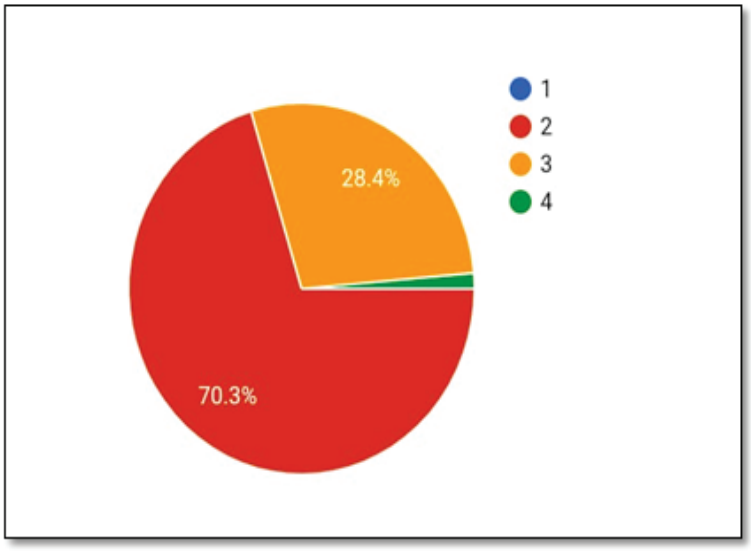

Figure 7: Knowledge on number of specimens collected: Distribution of nurses knowledge on the number of sputum samples required for the diagnosis of smear-positive TB cases.

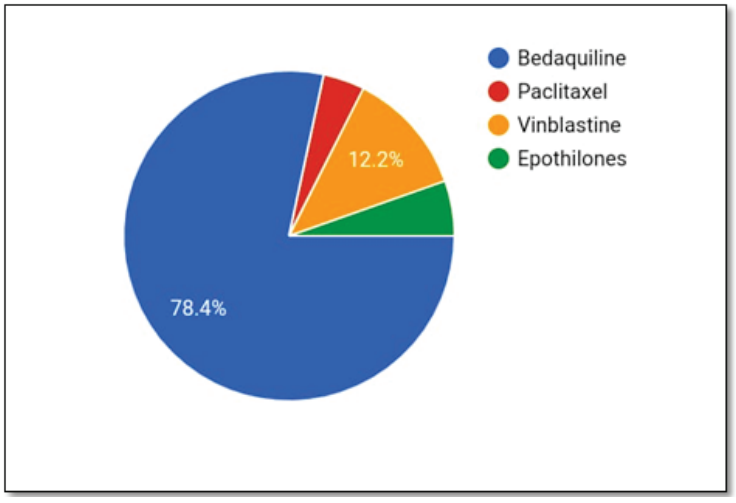

Figure 8: Knowledge about the new drug introduced for MDR- TB: Distribution of nurses correctly said that the new drug introduced to treat TB

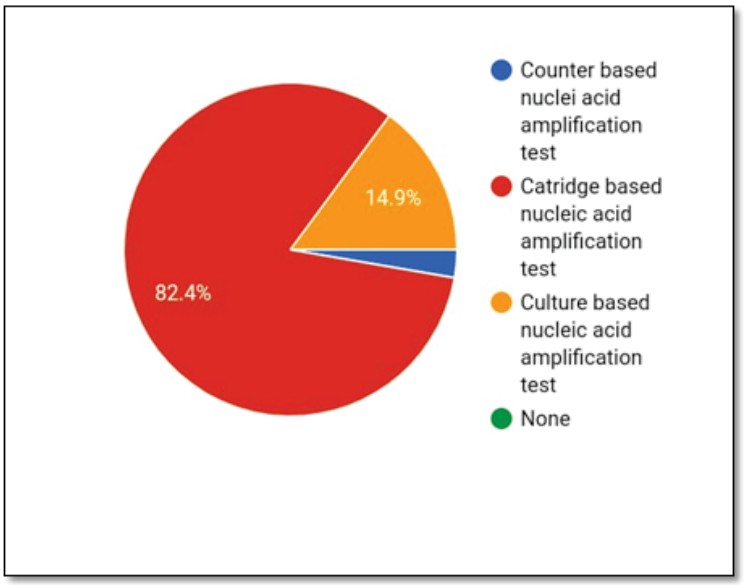

Figure 9: Knowledge on the full form of CBNAAT: Distribution of nurses responses on the full form of CBNAAT, with the correct answer being cartridge-based nucleic acid amplification test.

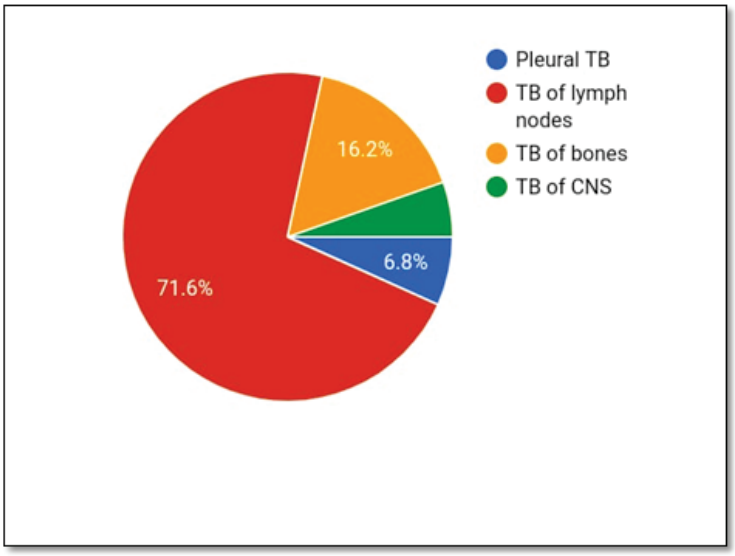

Figure 10: Knowledge on the most common form of extrapulmonary TB: Distribution of nurses knowledge on the most common form of extrapulmonary TB, with TB of the lymph nodes being the most common.

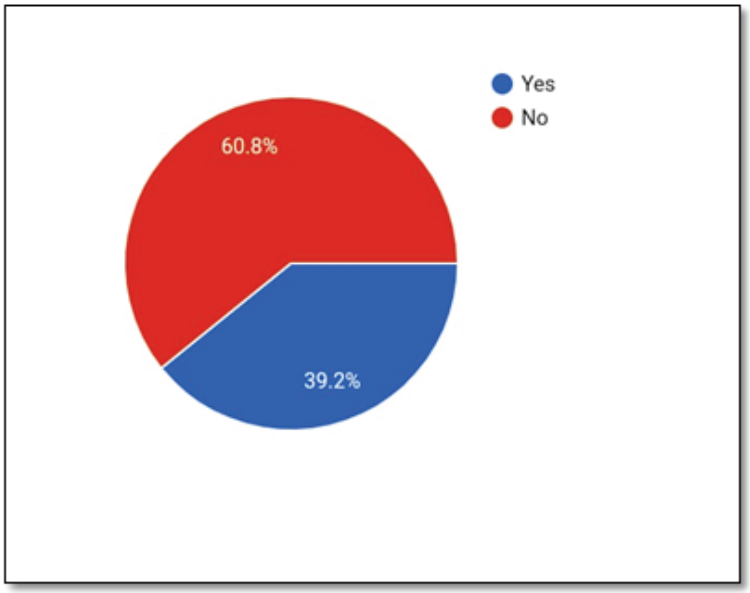

Figure 11: Knowledge about whether family members can be DOTS providers: Distribution of nurses responses on whether family members can be DOTS providers.

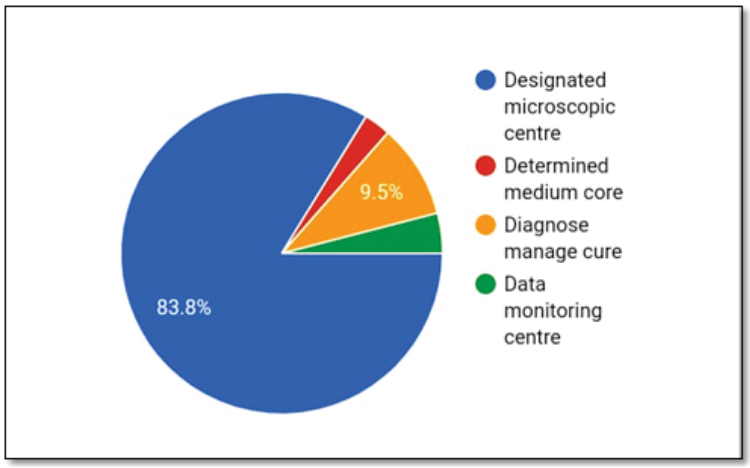

Figure 12: Knowledge about the full form of DMC : Distribution of nurses responses on the full form of DMC, with designated microscopy center being the correct answer.

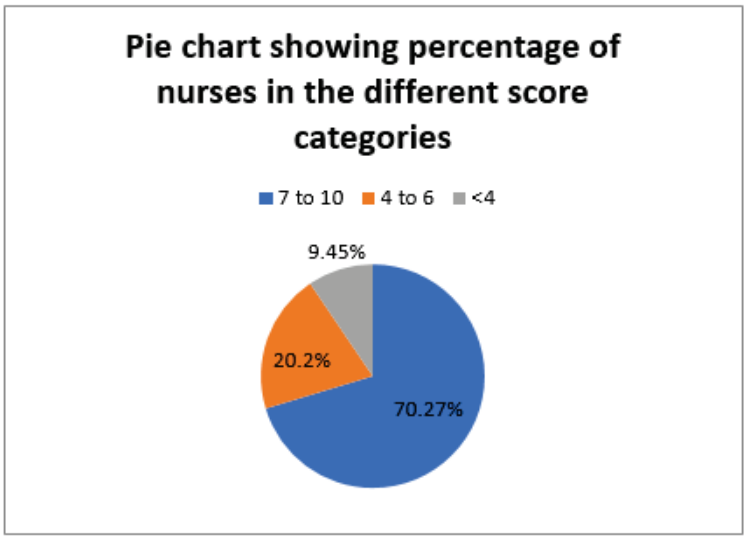

Figure 13: Overall Knowledge Scores: Distribution of nurses based on their knowledge scores, categorized into good, average, and poor knowledge.

A total of 74 nurses from MOSC Medical College, Kolenchery participated in the study, with ages ranging from 20 to 50 years and a mean age of 31.04 years. The majority of the participants were female (89.2%), with males comprising 10.8%. Regarding knowledge of the RNTCP regimen of chemoprophylaxis, 51.4% of nurses correctly identified that INH should be administered for 6 months to children under 6 years who are contacts of TB patients, irrespective of their immunization status. Another 32.4% suggested INH for 6 months to children under 6 years who are contacts of TB patients, while only 12.2% stated that all contacts of positive TB cases should receive 6 months of INH.

In terms of knowledge on effective drugs for TB-HIV coinfection to reduce mortality, 67.6% of nurses recommended Cotrimoxazole, which is the correct answer. Other drugs mentioned included Azithromycin (12.2%), Ciprofloxacin (10.8%), and Ethambutol (9.5%). When asked about the collection of AFB specimens, 73% correctly stated that one sample should be taken on the spot and another the next morning, while 24.3% believed that one sample should be taken on the spot and two early in the morning for two consecutive days.

For the current regimen followed by RNTCP, 56.8% of nurses accurately chose the (2)HRZE+4(HRZE) regimen as per the new guidelines. Other regimens suggested included (2)HRZE +(4) HRE (33.8%) and (2)HRZES+(1)HRZE (9.5%). Regarding the number of specimens collected, 70.3% of nurses correctly indicated that 2 sputum samples are required for diagnosing smear-positive cases under RNTCP, whereas 28.4% thought 3 sputum samples were necessary.

When questioned about the new drug introduced for MDR-TB, 78.4% correctly identified Bedaquiline, while 12.2% mentioned Paclitaxel, and 9.4% suggested Vinblastin and epothilones. In terms of the full form of CBNAAT, 82.4% of nurses correctly identified it as Cartridge Based Nucleic Acid Amplification Test, while 14.9% chose Culture Based Nucleic Acid Amplification Test, and 2.7% selected other options.

Regarding the most common form of extrapulmonary TB, 71.4% of nurses correctly chose TB of the lymph nodes, with other responses including TB of bones (16.2%), pleural TB (6.8%), and TB of the CNS (5.4%). On the question of whether family members can be DOTS providers, 60.8% of

nurses correctly stated that family members cannot be DOTO providers, while 39.2% believed they could be.

Finally, when asked about the full form of DMC, 83.8% of nurses correctly identified it as Designated Microscopy Centre. Other responses included Diagnose Manage and Cure (9.5%), Determined Medium Core (6.7%), and Data Monitoring Centre. Overall, the knowledge assessment showed that 70.27% of nurses scored between 7 to 10, indicating good knowledge, 20.2% scored between 4 to 6, indicating average knowledge, and 9.45% scored less than 4, indicating poor knowledge.

DISCUSSION

The study included 74 nurses of age group 20 to 50 years out of which majority were females (89.2%). A good proportion of nurses (73%) responded correctly regarding how AFB specimen should be requested from the patient. However in study on awareness of tuberculosis and RNTCP among nurses done by *Chennaveerappa P.K. et al*, 69% responded correctly.

The regimen followed under new guidelines of RNTCP is 2HRZE+4HRE and in our study most nurses did not give a correct response; only 33.8% were aware of the new regimen. This shows that nurses should be updated regarding new guidelines of RNTCP Treatment Regimen regarding the new drug Bedaquiline introduced for MDR-TB,in our study 78.4% were aware of the drug whereas in the comparative study only 75% were aware of the drug.

A majority of nurses(83.8%) had good knowledge about Designated microscopic centre whereas in the comparative study only 72% responded correctly. Most participants exhibited correct knowledge regarding the most common form of extra pulmonary TB; 71.6% opted TB of lymph nodes. Regarding assessment of knowledge on investigations related to TB, 82.4% of the participants were aware of CBNAAT (catridge based nucleic acid amplification test). Many nurses in our study (60.8%) correctly mentioned that family members cannot be DOTS providers whereas in the comparative study it was only 37.3%.

In a study done by S.A. Krithika, N. Nalini Jayanthi, S. Subramanian et al on 'Awareness of tuberculosis among nurses' it shows that a higher proportion of the participants (71.80%) were aware that pulmonary tuberculosis is contagious and identified the causative agent of TB to be bacterial.

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. Almost 96.20% of the participants mentioned that sputum sample is used for the diagnosis of TB. In our study also, a good proportion of nurses (73%) have responded correctly in that regard.

In this comparative study by Krithika et al, 56% only knew that there are treatment options for TB while 78% correctly mentioned that the duration of Anti-tuberculous treatment to be 6 months. And in our study, 78.4% were aware of the new drug Bedaquiline introduced for MDR-TB. With regards to diagnosis and laboratory investigations of TB, a large number of participants (70.3%) correctly mentioned that the number of sputum samples collected for diagnosis is 2 whereas it was 83.2% in the comparative study.

When knowledge regarding RNTCP policy of chemoprophylaxis was assessed, it was found that 51.4% of the study population opted giving INH for 6 months to child <3 years who are contacts of TB patients irrespective of their BCG status as whereas it was 46.6 % only in the study compared. A higher proportion of nurses (67.6%) correctly responded that Cotrimoxazole is an effective drug in TB-HIV co infection to reduce mortality and it was only 44.7 % in the study compared. A good proportion of nurses had satisfactory level of knowledge on RNTCP and DOTS. However, a small fraction of nurses falls into categories of Average and poor knowledge, implying that nursing professionals still need continuing educational programs regarding treatment and control of TB.

CONCLUSION

This study was done to assess the knowledge of nurses on RNTCP and DOTS and included 74 nurses of age group 20 to 50 years of MOSC Medical College Kolenchery. This was a cross sectional study which was planned and executed over a period of one year with the period of data collection being two months. The study used a structured, self-administered questionnaire which consisted of ten questions. This was distributed to all the study subjects included in the study and the filled up forms were collected. Each study participant was given a score based on the number of correct responses – 1 point for a correct response and 0 for a wrong response. Maximum score is 10 and minimum is 0. Based on the scores, the nurses were grouped into 3 different categories. The data collected was entered into a master chart and analysed.Based on the analysis tables and charts were prepared.

First category of scores 7 to 10 has 52 nurses, i.e. 70.27% with Good Knowledge, second category of scores 4 to 6 has 15 nurses, i.e. 20.2% with Average Knowledge and third category of scores < 4 has 7 nurses, i.e. 9.45% with Poor Knowledge. A large number of participants (70.3%) correctly mentioned that 2 sputum samples are collected for diagnosis. 73% of nurses responded correctly regarding how AFB specimen should be requested from the patient. Regarding the new drug Bedaquiline introduced for MDR-TB, 78.4% were aware of the drug . 83.8% had good knowledge about Designated microscopic centre. Most participants exhibited correct knowledge regarding the most common form of extra pulmonary TB; 71.6% opted TB of lymph nodes. 82.4% of the participants were aware of CBNAAT (Catridge Based Nucleic Acid Amplification Test).Many nurses (60.8%) correctly mentioned that family members cannot be DOTS providers. 67.6% correctly resp-

onded that Cotrimoxazole is an effective drug in TB- HIV co infection to reduce mortality and it was only 44.7 % in the study compared. A good proportion of nurses had satisfactory level of knowledge on RNTCP and DOTS. However a small fraction of nurses fall into categories of Average and poor knowledge, implying that nursing professionals still are in need of continuing educational programs regarding treatment and control of TB.

RECOMMENDATIONS

Nurses should be given training classes on the changes that are brought in treatment regimens.

LIMITATIONS

1. Academic constraints have prevented us from selecting a larger study sample which would have enabled us to reduce error of margin of the study.
2. Statistical test of significance was not used.
3. Only few questions (11) were used. Including more questions would have given a clearer evidence.

LEARNING EXPERIENCE

1. Learnt to work systematically
2. Learnt basics of research methodology
3. Learnt the process of developing a literature review

Learnt to collect data in an orderly manner and also to tabulate results

ACKNOWLEDGEMENT

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CONFLICTS OF INTEREST

Authors declared that there is no conflict of interest.

FUNDING

None

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All necessary consent & approval was obtained by authors.

CONSENT FOR PUBLICATION

All necessary consent for publication was obtained by authors.

DATA AVAILABILITY

All data generated and analyzed are included within this research article.

PUBLISHER'S NOTE

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