

Study to Assess the Knowledge and Practices Regarding Tuberculosis Prevention and Treatment among High-Risk Population at Selected Areas of Jalgaon District

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ABSTRACT

Tuberculosis (TB) is a preventable and curable disease, but it remains highly prevalent among people living in urban and rural slums, where overcrowding, poverty, and limited access to health care favour transmission. The presence of comorbid conditions such as diabetes mellitus, chronic lung disease, under nutrition, and substance use further increases the risk of infection, progression to active TB, and poor treatment outcomes in these communities. Despite on-going TB control activities, gaps in knowledge and sub-optimal preventive and treatment practices among slum dwellers continue to hinder early diagnosis, adherence, and infection control. This nursing research study aims to assess the knowledge and practices regarding TB prevention and treatment among high-risk population especially adults residing in selected slums, including those with comorbid diseases. The study found that 78% of participants had average knowledge, 17% had good knowledge, and 5% had poor knowledge regarding tuberculosis prevention and treatment. Regarding practices, 46% demonstrated moderate practices, 43% had good practices, and 11% had poor practices. Educational level

showed a statistically significant association with both knowledge and practice scores ($p < 0.05$). A strong positive correlation ($r = 0.72$, $p < 0.001$) was observed between knowledge and practices, indicating that better knowledge was associated with better preventive and treatment practices. Although most participants demonstrated average knowledge and satisfactory practices, important knowledge gaps and inadequate preventive practices still exist. Continuous community-based health education, awareness programmes, early screening, and counselling should be strengthened to improve tuberculosis prevention and treatment practices among high-risk populations.

Keywords: Tuberculosis, Knowledge, Practice, Prevention, Treatment, High-risk population

INTRODUCTION

Tuberculosis (TB) is one of the oldest and most devastating infectious diseases affecting humanity. It is caused by *Mycobacterium tuberculosis* and primarily affects the lungs, although it can involve almost every organ of the body. Tuberculosis spreads through airborne droplets released when an infected person

coughs, sneezes, or speaks. Despite being preventable and curable, TB remains a major public health challenge, particularly in low- and middle-income countries.⁽¹⁾

According to the World Health Organization (WHO) Global Tuberculosis Report 2025, approximately 10.8 million people developed tuberculosis globally in 2024, with over 1.2 million deaths among HIV-negative individuals. India continues to carry the largest burden of tuberculosis, accounting for nearly 27% of the world's TB cases.⁽²⁾

Certain populations are more vulnerable to tuberculosis because of biological, environmental, and social risk factors. High-risk populations include individuals with diabetes mellitus, HIV infection, chronic kidney disease, malnutrition, tobacco or alcohol use, close contacts of TB patients, healthcare workers, people living in overcrowded conditions, migrant labourers, and residents of urban slums. These groups have a higher likelihood of developing active tuberculosis due to weakened immunity and increased exposure to infection.⁽³⁾

Knowledge regarding tuberculosis plays a crucial role in disease prevention. Understanding the causes, symptoms, modes of transmission, preventive measures, availability of free diagnostic and treatment services, and the importance of treatment adherence encourages timely healthcare seeking and reduces disease transmission. However, misconceptions, poor awareness, stigma, and fear often lead to delayed diagnosis, treatment interruption, and the emergence of multidrug-resistant tuberculosis (MDR-TB).⁽⁴⁾

Jalgaon district, like many regions in Maharashtra, has a considerable burden of tuberculosis cases. Identifying the level of knowledge and practices among high-risk populations is essential for planning targeted educational interventions and strengthening community-based tuberculosis control programmes. Therefore, the present study was undertaken to assess the knowledge and practices regarding

tuberculosis prevention and treatment among high-risk populations residing in selected areas of Jalgaon district.

Objectives:

1. To assess the level of knowledge regarding tuberculosis prevention and treatment among slum populations.
2. To evaluate the practices followed by slum populations for the prevention and treatment of tuberculosis
3. To find out the correlation between knowledge and practice among slum population.
4. To find out the association between selected demographic variables with knowledge and practices regarding tuberculosis prevention and treatment.

Hypothesis:

H1-There will be significant correlation between knowledge and practice score among slum population.

H2: There will be significant association between knowledge and practice score among slum population.

MATERIALS & METHODS

A quantitative research approach with a cross-sectional descriptive design was adopted to assess the knowledge and practices regarding tuberculosis (TB) prevention and treatment among high-risk population. The study was conducted among adults residing in selected community area including urban slum areas of Jalgaon District who were considered at high risk for tuberculosis. A total of 100 participants were selected using a purposive sampling technique. Data were collected using a structured interview schedule consisting of two sections: demographic variables and a structured questionnaire to assess knowledge and practices regarding TB prevention and treatment. The questionnaire included knowledge-related items and a practice checklist covering preventive behaviours, early diagnosis, treatment adherence, cough etiquette, and infection control practices.

Statistical Analysis

The data collected of the study was classified, organized and analyzed under following sections: -

SECTION I- Deals with analysis of demographic data of the people residing in slum areas in terms of frequency and percentage.

SECTION II- Deals with analysis of data related to assessment of level of knowledge and practices regarding tuberculosis prevention and treatment among slum population in terms of frequency and percentage.

SECTION III- Deals with analysis of data related to the association between knowledge and practices regarding tuberculosis prevention and treatment among slum population with their selected demographic variables.

SECTION IV- Deals with analysis of data related to correlation between knowledge and practices regarding tuberculosis prevention and treatment among slum population.

SECTION I

Deals with analysis of demographic data of the slum population in terms of frequency and percentage.

Table 1: Frequency & percentage distribution of tuberculosis high-risk population

Variable	Groups	Frequency	Percentage
Age (in years)	21-30	39	39.00
	31-40	28	28.00
	41-50	19	19.00
	51-60	14	14.00
Gender	Male	55	55.00
	Female	45	45.00
Place of residence	Rural	52	52.00
	Urban	48	48.00
Education Level	Primary	28	28.00
	Secondary	31	31.00
	Graduate	41	41.00
Diet Pattern	Mixed diet	77	77.00
	Vegetarian	23	23.00
Smoking Status	Current smoker	18	18.00
	Non-smoker	82	82.00
Presence of Chronic Disease	Diabetes	10	10.00
	Hypertension	13	13.00
	No	77	77.00
BCG Vaccination Status	Yes	100	100.00
	No	0	0.00
Family History of TB	Yes	0	0.00
	No	100	100.00
Morbidity Status	Yes	0	0.00
	No	100	100.00

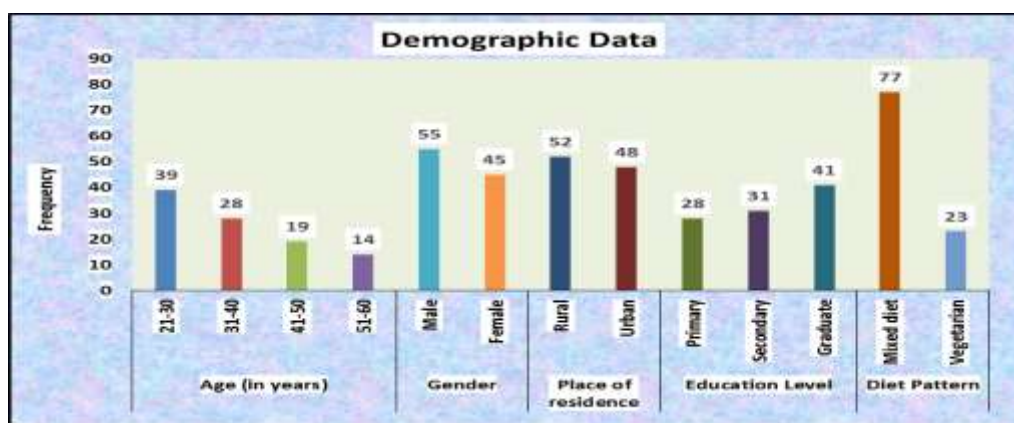


Figure No-1: Distribution of tuberculosis high-risk population

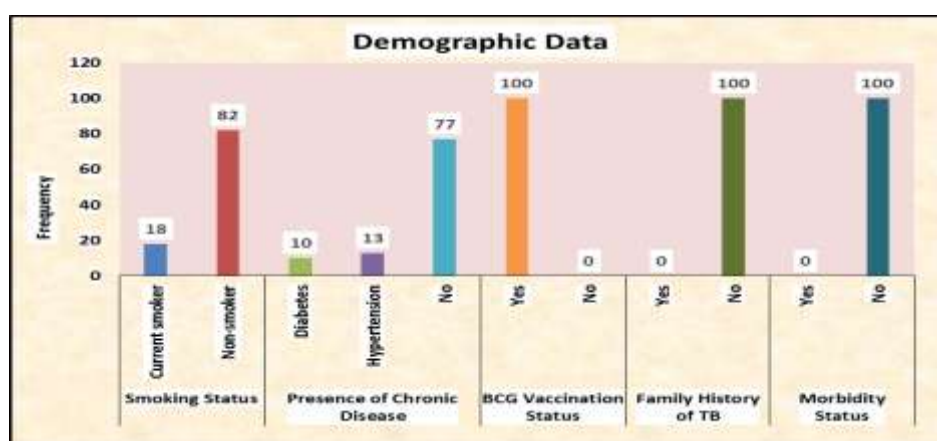


Figure No-2: Distribution of tuberculosis high-risk population

SECTION II

Deals with analysis of data related to assessment of level of knowledge regarding

tuberculosis prevention and treatment among high-risk population.

Table 2: General assessments of Knowledge regarding tuberculosis prevention and treatment

Variable	Groups	Score	Frequency	Percentage
KNOWLEDGE	Poor	0-6	5	5.00
	Average	7-12.	78	78.00
	Good	13-17	17	17.00
KNOWLEDGE	Minimum		4	
	Maximum		16	
	Average (SD)		10.78 (2.18)	

For assessment purpose total score of knowledge regarding tuberculosis prevention and treatment among high-risk population was divided in to three groups like poor (0-6 score), average knowledge (7-12 score) and good knowledge (13-17 score).

Assessment of level of knowledge regarding tuberculosis prevention and treatment

among high-risk population shows that, 5% of them had poor knowledge, 78% average knowledge and 17% of them had good knowledge.

Average knowledge score was 10.78 with standard deviation of 2.18. The minimum score of knowledge was 4 with maximum score of 16.

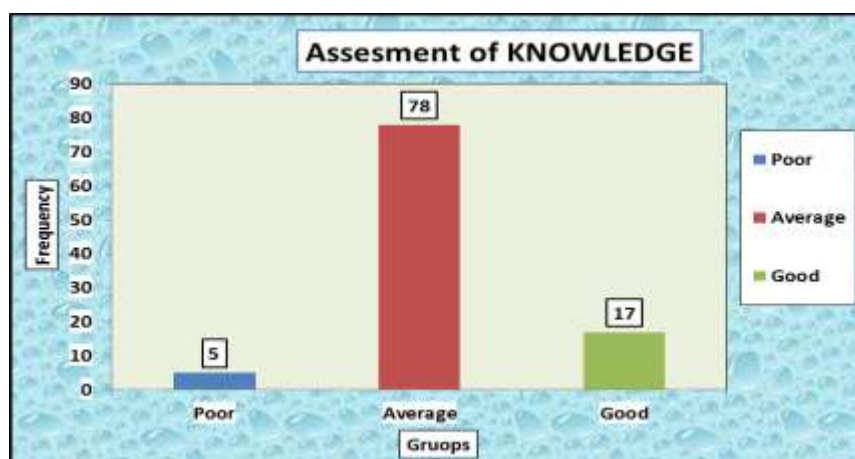


Figure No-3: Knowledge regarding tuberculosis prevention and treatment

Deals with analysis of data related to assessment of level of practices regarding tuberculosis prevention and treatment among high-risk population.

Table 3: General assessments of Practice regarding tuberculosis prevention and treatment

Variable	Groups	Score	Frequency	Percentage
PRACTICE	Poor	0-10	11	11.00
	Moderate	11-15	46	46.00
	Good	16-20	43	43.00
PRACTICE	Minimum		6	
	Maximum		20	
	Average (SD)		14.34 (3.30)	

For assessment purpose total score of practices regarding tuberculosis prevention and treatment among high-risk population was divided in to three groups like poor (0-10 score), moderately practice (11-15 score) and good practices (16-20 score).

Assessment of level of practices regarding tuberculosis prevention and treatment

among high-risk population shows that, 11% of them had poor practice, 46% moderately practice and 43% of them had good practice.

Average practice score was 14.34 with standard deviation of 3.30. The minimum score of practice was 6 with maximum score of 20.

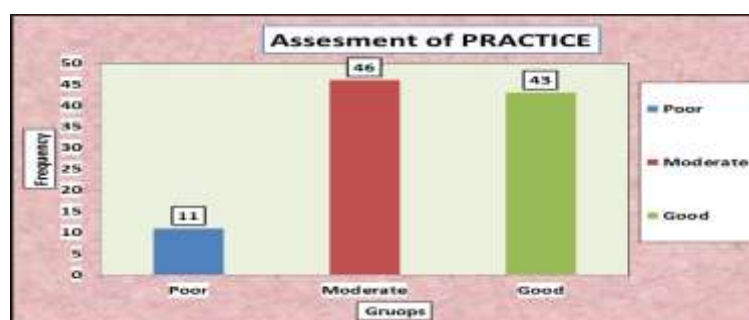


Figure No-4: Practice regarding tuberculosis prevention and treatment

SECTION III

Deals with analysis of data related to the association between knowledge regarding

tuberculosis prevention and treatment among high-risk population with their selected demographic variables.

Table 4: Association of Knowledge with demographic variables

Variable	Groups	KNOWLEDGE		Chi Square	d.f.	p value	Significance
		below Md	Above Md				
Age (in years)	21-30	25	14	0.47	3	0.92	Not Significant
	31-40	16	12				
	41-50	11	8				
	51-60	9	5				
Gender	Male	33	22	0.05	1	0.82	Not Significant
	Female	28	17				
Place of residence	Rural	32	20	0.01	1	0.91	Not Significant
	Urban	29	19				
Education Level	Primary	25	3	15.99	2	0.000	Significant
	Secondary	12	17				
	Graduate	24	19				
Diet Pattern	Mixed diet	48	29	0.25	1	0.61	Not Significant
	Vegetarian	13	10				
Smoking Status	Current smoker	12	6	0.29	1	0.58	Not Significant
	Non-smoker	49	33				
Presence of Chronic Disease	Diabetes	5	5	0.56	2	0.75	Not Significant
	Hypertension	8	5				
	No	48	29				
BCG Vaccination Status	Yes	61	39	Cannot compute Chi-Square			
	No	0	0				
Family History of TB	Yes	0	0	Cannot compute Chi-Square			
	No	61	39				
Morbidity Status	Yes	0	0	Cannot compute Chi-Square			
	No	61	39				

ASSOCIATION OF KNOWLEDGE SCORE IN RELATION TO DEMOGRAPHIC VARIABLES

The chi square test was used to see association between knowledge regarding tuberculosis prevention and treatment among high-risk population with their selected demographic variables.

The test was conducted at 5% level of significance.

Significant Association:

For demographic variable, educational level, p value of the association test with knowledge was less than 0.05. That means, the knowledge regarding tuberculosis prevention and treatment among high-risk

population was associated with their educational level.

Concludes that, there was significant association of demographic variable educational level with the knowledge.

For demographic variables, age, gender, place of residence etc., p value of the association test with knowledge was more than 0.05. That means, the knowledge regarding tuberculosis prevention and treatment among high-risk population was not associated with these demographic variables.

Deals with analysis of data related to the association between practices regarding tuberculosis prevention and treatment among high-risk population with their selected demographic variables.

Table 5: Association of Practice with demographic variables

Variable	Groups	PRACTICE		Chi Square	d.f.	p value	Significance
		below Md	Above Md				
Age (in years)	21-30	20	19	3.32	3	0.344	Not Significant
	31-40	20	8				
	41-50	10	9				
	51-60	7	7				

Gender	Male	32	23	0.07	1	0.79	Not Significant
	Female	25	20				
Place of residence	Rural	31	21	0.302	1	0.58	Not Significant
	Urban	26	22				
Education Level	Primary	21	7	7.97	2	0.019	Significant
	Secondary	12	19				
	Graduate	24	17				
Diet Pattern	Mixed diet	46	31	1.02	1	0.31	Not Significant
	Vegetarian	11	12				
Smoking Status	Current smoker	11	7	0.151	1	0.69	Not Significant
	Non-smoker	46	36				
Presence of Chronic Disease	Diabetes	3	7	3.31	2	0.19	Not Significant
	Hypertension	8	5				
	No	46	31				
BCG Vaccination Status	Yes	57	43	Cannot compute Chi-Square			
	No	0	0				
Family History of TB	Yes	0	0	Cannot compute Chi-Square			
	No	57	43				
Morbidity Status	Yes	0	0	Cannot compute Chi-Square			
	No	57	43				

ASSOCIATION OF PRACTICE SCORE IN RELATION TO DEMOGRAPHIC VARIABLES

The chi square test was used to see association between practices regarding tuberculosis prevention and treatment among high-risk population with their selected demographic variables. The test was conducted at 5% level of significance.

Significant Association: For demographic variable, educational level, p value of the association test with practice was less than 0.05. That means, the practice regarding tuberculosis prevention and treatment among high-risk population was associated with their educational level. **Concludes that, there was significant association of**

demographic variable educational level with the practice

For demographic variables, age, gender, place of residence etc., p value of the association test with practice was more than 0.05. That means, the practice regarding tuberculosis prevention and treatment among high-risk population was not associated with these demographic variables.

SECTION – IV

Deals with analysis of data related to correlation between knowledge and practices regarding tuberculosis prevention and treatment among high-risk population.

Table 6: Correlation between knowledge and practices regarding tuberculosis prevention and treatment among high-risk population

Correlation	p value
0.72	0.000

The Karl Pearson's correlation coefficient was used to find correlation between knowledge and practices regarding tuberculosis prevention and treatment among high-risk population. The correlation coefficient between knowledge and practice was 0.72 with the p value 0.00. The p value

less than 0.05, shows the significant correlation between the knowledge and practices regarding tuberculosis prevention and treatment among high-risk population. The scatter diagram, also confirms correlation between knowledge and practice.

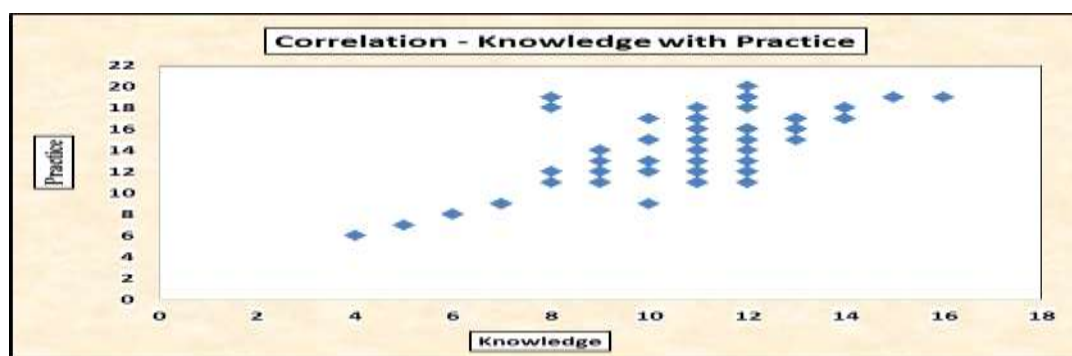


Figure 5: Scatter Diagram - Correlation of Knowledge with Practice

RESULT

The demographic findings showed that the majority of participants (39%) belonged to the 21–30 years age group, 55% were males, 52% resided in rural areas, and 41% were graduates. Most participants (77%) consumed a mixed diet, 82% were non-smokers, and 77% had no chronic disease. All participants had received BCG vaccination, and none reported a family history of tuberculosis or previous tuberculosis morbidity.

Regarding knowledge, 78% of participants had average knowledge, 17% had good knowledge, and only 5% had poor knowledge. The mean knowledge score was 10.78 ± 2.18 , with scores ranging from 4 to 16.

Regarding practices, 46% demonstrated moderate practices, 43% had good practices, and 11% had poor practices. The mean practice score was 14.34 ± 3.30 , with scores ranging from 6 to 20.

Chi-square analysis revealed that educational level had a statistically significant association with both knowledge ($\chi^2=15.99$, $p<0.001$) and practice ($\chi^2=7.97$, $p=0.019$). No significant association was observed between knowledge or practice and other demographic variables including age, gender, residence, diet pattern, smoking status, or chronic disease.

Karl Pearson's correlation coefficient demonstrated a strong positive correlation between knowledge and practice ($r=0.72$, $p<0.001$), indicating that participants with better knowledge were more likely to follow appropriate tuberculosis prevention and treatment practices.

DISCUSSION

The present study assessed knowledge and practices regarding tuberculosis prevention and treatment among high-risk populations. The findings revealed that the majority of participants possessed average knowledge (78%) and moderate-to-good preventive practices (46%). Although awareness regarding tuberculosis was satisfactory, important deficiencies remained in preventive behaviour and treatment-related practices.

Educational status was significantly associated with both knowledge and practices, suggesting that higher educational attainment contributes to improved understanding and adoption of recommended tuberculosis preventive measures. Similar findings have been reported in previous studies, where education was identified as an important predictor of tuberculosis awareness and health-seeking behaviour. Similar descriptive study was conducted by Guardia Zuñiga RC et al. on educational level mediates the relationship between knowledge and preventive practices in multidrug-resistant tuberculosis patient and found that participants with higher educational levels demonstrated significantly better knowledge and practices regarding tuberculosis prevention and treatment than those with lower educational attainment.⁽⁵⁾

The strong positive correlation between knowledge and practice ($r=0.72$) indicates that improving community knowledge through structured educational interventions can positively influence preventive

practices. These findings emphasize the important role of nurses and community health workers in conducting targeted health education programmes, promoting early diagnosis, encouraging treatment adherence, and reducing the stigma associated with tuberculosis. Similar study was conducted by Jeel Shihora on knowledge, attitudes, and preventive practices regarding tuberculosis among healthcare workers and patients in India: a mixed-method study which identifies gaps in TB prevention knowledge and practices among patients compared to those among HCWs in India. Study concluded that tailored educational initiatives, optimized health communication, improved infrastructure, and accessible messaging can help individuals assimilate appropriate infection control behaviors among healthcare system actors and communities toward ending TB.⁽⁶⁾

CONCLUSION

The study concludes that most high-risk individuals had average knowledge and moderate practices regarding tuberculosis prevention and treatment. Educational level significantly influenced both knowledge and practices, and a strong positive correlation existed between knowledge and practice. Strengthening community-based health education, early screening programmes, and counselling services can improve tuberculosis prevention and treatment practices among high-risk populations. Nursing professionals should continue to play a central role in tuberculosis awareness, case detection, and treatment adherence under the National Tuberculosis Elimination Programme.

Declaration by Authors

Ethical Approval: Ethical approval was obtained from the Institutional Ethics Committee before commencement of the study.

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Conflict of Interest: The authors declare no conflict of interest.

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