

Knowledge, attitude and practices regarding tuberculosis among new pulmonary tuberculosis patients in a new urban township in India

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Abstract

Background: A high level of awareness of tuberculosis (TB) is very important for its prevention and control in the community.

Objective: To study the knowledge, attitude, and practices regarding TB and the effect of sociodemographic characteristics.

Materials and Methods: A cross-sectional study was conducted of all patients with new smear-positive pulmonary TB diagnosed between January 2012 and June 2013 at RNTCP clinic. The information was collected with reference to knowledge, attitude, and practices regarding TB (its signs and symptoms, mode of spread, cause, investigations, treatment, and prevention). Bivariate and logistics regression were applied to study the effect of sociodemographic characteristics on knowledge, attitudes, and practices regarding TB.

Result: A total of 122 patients with a mean age of 29.9 years were included in the study. Persistence cough (48.4%) was the most common symptom known, 87% were aware that TB could spread to others with 56.6% being aware of airborne transmission. Misconceptions such as casual contact as a route of spread were observed. Females and those without secondary education were less aware of various aspects of TB. Of all, 32% stated government health facility as a place of choice for treatment of TB. A low knowledge score was significantly associated with young age group ($P = 0.037$), less education ($P < 0.001$), and low income ($P = 0.027$). A low attitude and practice score was significantly associated with less education ($P = 0.002$), low income ($P = 0.008$), and nuclear family ($P = 0.008$).

Conclusion: The study participants had good knowledge of TB but there were several misconceptions regarding the cause of TB that need to be clarified. Community-based programs on TB awareness need to be increased among young people and less educated groups.

KEY WORDS: Knowledge, tuberculosis, health-seeking behavior, urban community

Introduction

All of us know that tuberculosis (TB) is a major public health problem in India accounting for approximately one-fourth of the global incidence.^[1] In 2013, of the estimated global annual incidence of 9 million TB cases, 2.1 million were estimated to have occurred in India.^[2] A case of untreated smear-positive TB can infect up to 15 people annually and more than 20 people during the natural course of untreated disease.^[3,4] The RNTCP

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was formed in 1993. In a passive case-finding program, early case detection and prompt effective treatment of TB is dependent upon patients perceiving the need to seek care immediately at the onset of pulmonary symptoms, then visiting a health facility, and being properly diagnosed and treated.^[5] Therefore, it is important that basic knowledge on TB and availability of its treatment is clear among the people in the community. Equally important is the correct attitude and practices among the people with reference to TB.

Navi Mumbai is a planned township in Mumbai on the west coast of the Indian state of Maharashtra. It was developed in 1972 as a new urban township and is the largest planned city in the world. As per provisional reports of Census India, population of Navi Mumbai in 2011 was 1,119,477 of which male and female were 611,501 and 507,976, respectively.^[6] The huge population growth due to immigration from all over India, poverty, overcrowding, poor living condition, and excess demand for health-care services may have led to an increase in the incidence of TB. A high level of awareness on TB is essential for the prevention and control of TB in the community. Hence, this study was undertaken with the objective of assessing the knowledge, attitudes, and practices regarding TB in Navi Mumbai.

Materials and Methods

Study Area

In India there are different types of health-care institutions where pulmonary TB (PTB) is diagnosed using sputum smear examination. The institutions vary from tertiary level hospitals such as medical colleges, district TB centers at district level, TB units at subdistrict level, and peripheral health institutions. In Navi Mumbai, there are three TB units: Belapur, Vashi, and Airoli. Each TB Unit consists of 4–5 designated microscopy centers (DMCs) depending on the population. We have randomly selected one DMC from one TB Unit.

Study Population

A cross-sectional community-based study was carried out that included patients with all new sputum smear-positive PTB diagnosed between January 2012 and June 2013. In Navi Mumbai, the public health system provides health services through a network of hospitals and health posts to approximately 75% population. Like other parts of the country, TB diagnosis and treatment are provided by the public health system and are free of charge.

Data Collection Techniques and Tools

The information obtained from patients included socio-demographic characteristics, knowledge regarding TB including its signs and symptoms, mode of spread, cause, investigations and treatment, prevention methods, and choice of treatment facilities for TB. A score of one was given to correct responses and zero for incorrect or don't know responses. Then, the responses were added together to generate a knowledge score ranging from 0 to 8 and an attitude and practice score

ranging from 0 to 8. The interviews were conducted at health facilities. Patients who could not be interviewed at health facilities were visited at home to obtain the required information. Community health visitors assisted in locating the patients' residential address in the community. Before starting the interview each respondent was explained in brief about the need and purpose of the study. The importance for their cooperation for the success of the study and possible benefits to the community through the finding of the study were emphasized. The study protocol and questionnaire were approved by Institutional Ethical Committee. The informed consent was obtained from each interviewee before enrolment in the study and confidentiality of the information was maintained throughout the study.

Analysis

Data were entered and analyzed using SPSS version 16.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistic procedures were used for the calculation of central tendency and dispersion measures. The composite score of knowledge was dichotomized using median (which was 5) as a cutoff value so that score above median value was coded as 1 showing high overall knowledge of TB and score below median value was coded as 0 showing low overall knowledge of TB in the community. Similarly, the composite score of attitudes and practices was dichotomized using median (which was 3) as a cutoff value so that score above median value was coded as 1 showing good attitudes and practices and score below median value was coded as 0 showing poor attitudes and practices. To assess the effects of the sociodemographic variables and other risk factors on knowledge, attitudes, and practices of TB; odds ratios; and their 95% confidence intervals were calculated. *P*-value <0.05 was considered significant and all tests were two-sided.

Result

One hundred and twenty-two persons participated in the study. Of these, 52.5% were males, 62.3% were younger than 30 years of age, 59% completed secondary school, 50.8% were employed and 61.5% were married. The sociodemographic and clinical characteristics of patients are shown in Table 1. The mean age was 29.9 years (median 26, range 15–65 years). The mean age of males and females were 32.2 and 27.4 years, respectively and the difference being statistically significantly (*P* < 0.05). The median monthly household per capita income was INR 2472 (range 667.00–12000.00), that is, approximately US\$38. Mean duration of stay of study participants in the community was 14.5±9.75 years. The median time spent in travel to cover the distance of the study participant's home from the nearest health facility was 10.0 min (range 5.0–30.0) regardless of the form of transport used.

One hundred and nine study participants (89.3%) reported that they had heard of TB, 61 (55.9%) being males and 48 (44.1%) being females. The main source of information for 79 (64.7%) was the health worker. Regarding the cause of

Table 1: Sociodemographic and clinical characteristics of patients

Characteristic	No. (%)
Age (years)	
<30	76 (62.3)
>30	46 (37.7)
Sex	
Female	58 (47.5)
Male	64 (52.5)
Marital status	
Single	47 (38.5)
Married	75 (61.5)
Completed secondary school	
No	50 (41.0)
Yes	72 (59.0)
Occupation	
Nonworking	60 (49.2)
Working	62 (50.8)
No. of household members	
<5	76 (62.3)
>5	46 (37.7)
Per capita income (INR)	
<2000	51 (41.8)
>2000	71 (58.2)
Type of first health facility	
Private	83 (68.0)
Government	39 (32.0)
Distance between home and nearest health facility (min)	
<30	71 (58.2)
>30	51 (41.8)
Duration of stay (years)	
<15	75 (61.5)
>15	47 (38.5)

TB, only 43 (35.2%) study participants knew that the cause was due to bacteria. Cold (33.7%), food shortage (12.6%), smoking (48.9%), alcohol (37.8%), and dust (33.3%) were also mentioned as causes of TB which are considered to be incorrect. Fifty-nine (48.4%) participants were aware that persistence cough is a TB symptom. Other symptoms mentioned were coughing blood (24.8%), fatigue (23.1%), chest pain (12.3%), breathlessness (11.4%), and fever (5.7%). As noted, there was a low level of awareness of TB symptoms and its causes among the study participants.

Majority (87.0%) knew that TB can be transmitted from one person to another person. Coughing and sneezing by someone infected with the disease was correctly mentioned as mode of transmission by a greater proportion of study participants (69, 56.6%). Male participants were more likely to know TB as an airborne disease compared to female participants but the difference is not significant (57.9% vs

42.1%, $P = 0.164$). Eighty-two (67.2%) study participants mentioned that TB can affect anybody whereas only two (1.6%) study participants mentioned that it mainly affects poor people. Most (74.5%) of the study participants responded that transmission of TB is preventable. Sixty-nine (56.6%) study participants knew that PTB transmission is preventable by avoiding coughing or sneezing from infected patients on others. A greater proportion (83.6%) of study participants knew that TB is a treatable disease. Of the 122 respondents, 73 (59.8%) and 72 (59.0%), respectively, knew that PTB can be cured if an infected person took his treatment regularly and that treatment takes months to complete. 52.4% of the study participants had no particular feeling toward people with TB disease whereas 47.6% felt compassion and desire to help the patients.

Majority of the study participants (67.2%) said that they would talk about their illness with doctors or other medical workers if they got TB, while others would like to talk to their parents, children, close friends, or elders.

Table 2 shows the results of the multivariate analysis while assessing the effect of sociodemographic characteristics on the overall knowledge of study participants about TB. Mean score for knowledge was 4.91 ± 2.9 , median was 5.00, with 63 (51.6%) scoring below the median and 59 (48.4%) scoring above the median. Males had a higher mean score (5.09 ± 2.85) compared with females (4.71 ± 2.87), however, the difference was not statistically significant ($P = 0.87$). Poor knowledge about TB was significantly associated with young age group ($P = 0.037$), less education ($P < 0.001$) and low income ($P = 0.027$). Knowledge showed no association with gender, religion, marital status, occupation, duration of stay in the community, and distance between home and nearest health facility.

Table 3 shows the results of the multivariate analysis while assessing the effect of sociodemographic characteristics on the attitudes and practices of study participants about TB. Median for attitudes and practices was 3. Sixty-four (52.5%) study participants had attitude and practice scores below the median implying unfavorable attitudes and practices whereas 58 (47.5%) had attitude and practices scores above the median. Unfavorable attitudes and practices regarding TB was significantly associated with less education ($P = 0.002$), low income ($P = 0.008$) and nuclear family ($P = 0.008$). Attitudes and practices showed no association with age, sex, marital status, occupation, or type of first health facility visited.

Discussion

This study showed an overall mean knowledge score of TB of 4.91 and attitudes and practices of 4.15. Studies conducted in other countries reported knowledge score of TB to be between 2.2 and 17.6, whereas attitudes and practices score between 3.9 and 6.7.^[7-11] Majority (89.3%) of the study participants have answered that they have heard of TB disease which indicates that TB is well-known to people in this study area. The similar finding was observed in previous

Table 2: Relation between knowledge and sociodemographic and other risk factors

Particulars	Knowledge level			P-value
	Poor, No. (%)	Good, No. (%)	OR (95% CI)	
Age (years)				
<30	33 (43.4)	43 (56.6)	1.00	
≥30	29 (63.0)	17 (37.0)	0.45 (0.21–0.95)	0.037
Sex				
Female	32 (55.2)	26 (44.8)	1.00	
Male	30 (46.9)	34 (53.1)	1.39 (0.68–2.85)	0.360
Religion				
Others	15 (53.6)	13 (46.4)	1.00	
Hindu	47 (50.0)	47 (50.0)	1.15 (0.49–2.69)	0.740
Marital status				
Single	26 (55.3)	21 (44.7)	1.00	
Married	36 (48.0)	39 (52.0)	1.34 (0.64–2.79)	0.432
Completed secondary school				
No	38 (76.0)	12 (24.0)	1.00	
Yes	24 (33.3)	48 (66.7)	6.33 (2.81–14.28)	0.000
Occupation				
Nonworking	30 (50.0)	30 (50.0)	1.00	
Working	32 (51.6)	30 (48.4)	0.94 (0.46–1.91)	0.859
Per capita income (INR)				
≤2000	32 (62.7)	19 (37.3)	1.00	
>2000	30 (42.3)	41 (57.7)	2.30 (1.10–4.81)	0.027
Distance between home and nearest health facility (km)				
≤1	31 (43.7)	40 (56.3)	1.00	
>1	31 (60.8)	20 (39.2)	0.50 (0.24–1.04)	0.063
Duration of stay (years)				
≤15	37 (49.3)	38 (50.7)	1.00	
>15	25 (53.2)	22 (46.8)	0.86 (0.41–1.78)	0.678

studies done in Ethiopia^[11] and Nigeria^[12] where 94.3% and 86.0% of the study participants have heard of TB, respectively. But, similar to earlier studies in Ethiopia,^[11,13,14] Nigeria,^[12] and Uganda,^[15] very few study participants were aware of bacteria as a causative agent of TB in this study. Majority of the study participants mentioned cold air, breathing in dust, smoking, and poor nutrition as the cause of TB. Such misconceptions about the cause of TB have been reported in previous studies.^[12,16,17] The implication of such misconceptions regarding the cause of TB is that it may have a negative impact on patients' attitude toward health-seeking behavior as people with such misconceptions may not visit health facilities or consider self-treatment, both of which delay case detection and treatment of patients with TB in the community.

This study revealed that the study participants had basic knowledge about the symptoms of TB and its modes of transmission which agrees with prior studies in Croatia,^[9] Madagascar,^[18] Ethiopia,^[19] and India.^[20] The symptom most frequently reported by the study participants was persistence cough similar to finding reported in a study in Brazil.^[5] The other symptoms reported were fever, weight loss, hemoptysis, breathlessness,

and chest pain. This is vital when making decisions about the content of TB awareness campaigns. Although more than half of the study participants knew how the disease was transmitted, it is of concern that 43.4% patients were not aware of correct mode of transmission as they should have been clearly educated on different aspects of TB at the start of treatment. Coughing and sneezing by patients with TB and sharing cups with the patients were the common perceived modes of transmission in different studies.^[10,11,16] This study highlighted some gaps in knowledge, especially those related to the cause of the disease and the transmission methods which should be taken into account when setting TB awareness campaigns.

Majority of the study participants were aware of the prevention and treatment methods of TB, which is almost similar to a study performed by Mushtaq *et al.*^[21] The various prevention methods mentioned and documented in previous studies from Nigeria^[7,12] and Ethiopia.^[22] were covering mouth and nose when patient with TB coughs or sneezes, using a separate room for the patient, avoid sharing cups and utensils with the patient, and proper ventilation of houses. The study participants' knowledge with reference to the treatment of TB

Table 3: Relation between attitudes and practices and sociodemographic and other risk factors

Particulars	Attitudes and Practices			P-value
	Unfavorable, No. (%)	Favorable, No. (%)	OR (95% CI)	
Age (years)				
<30	35 (46.1)	41 (53.9)	1.00	
>30	29 (63.0)	17 (37.0)	0.50 (0.24–1.06)	0.070
Sex				
Female	32 (55.2)	26 (44.8)	1.00	
Male	32 (50.0)	32 (50.0)	1.23 (0.60–2.51)	0.568
Religion				
Others	15 (53.6)	13 (46.4)	1.00	
Hindu	49 (52.1)	45 (47.9)	0.99 (0.39–2.55)	0.994
Marital status				
Single	25 (53.2)	22 (46.8)	1.00	
Married	39 (52.0)	36 (48.0)	1.05 (0.50–2.18)	0.898
Completed secondary school				
No	35 (70.0)	15 (30.0)	1.00	
Yes	29 (40.3)	43 (59.7)	3.46 (1.61–7.45)	0.002
Occupation				
Nonworking	32 (53.3)	28 (46.7)	1.00	
Working	32 (51.6)	30 (48.4)	1.07 (0.53–2.18)	0.849
Per capita income (INR)				
<2000	34 (66.7)	17 (33.3)	1.00	
>2000	30 (42.3)	41 (57.7)	2.73 (1.29–5.78)	0.008
Type of first health facility				
Private	39 (47.0)	44 (53.0)	1.00	
Government	25 (64.1)	14 (35.9)	0.50 (0.23–1.09)	0.080
Smoking				
No	51 (49.0)	53 (51.0)	1.00	
Yes	13 (72.2)	5 (27.8)	0.37 (0.12–1.11)	0.077
Type of family				
Nuclear	45 (62.5)	27 (37.5)	1.00	
Joint	19 (38.0)	31 (62.0)	2.72 (1.29–5.72)	0.008

using modern specific drugs was very high compared to the results of previous studies conducted in Ethiopia^[10,11] but less compared to the results of studies conducted in Nigeria,^[7] Vanuatu,^[16] and Pakistan.^[21] The other treatment methods reported by the study participants were traditional healers, pharmacist advice, self-treatment, and praying which are in consistence with findings by Deribew et al.^[22] This highlights some gaps in knowledge related to treatment of TB which was proved in a study by Gele et al.^[19]

It was encouraging to see that most (67.2%) of the study participants reported that they would approach health facility if they had TB symptoms, similar to earlier studies in Vanuatu^[16] and Pakistan.^[23] Our study findings showed that a private clinic was the first point of contact for 68% of study participants and a public health facility for 32% of study participants, compared to respectively 43% and 47% in a study from the southern part of India.^[24] This decrease in patients presenting initially to the public health facility in our study could be due

to lack of awareness among the community about the availability of free and effective TB treatment services under the RNTCP. Almost half of the study participants mentioned that TB is a very serious disease in general. When study participants were asked about how they feel if they found that they have TB, majority of them reported that they would feel fear, sadness, or hopelessness as in Ethiopia^[10] and Madagascar.^[18] The perception of TB as a very serious disease resulting in fear may be due to certain factors such as long duration of TB treatment, associated complications, high mortality, loss of daily wages, and social stigma attached to the disease. In this study, nearly half of the study participants mentioned that patients with TB are mostly supported and helped by the community. This is in contrast to many other studies conducted in Uganda,^[15] Pakistan^[23] and Tanzania.^[25]

In this study, poor knowledge on TB was significantly associated with young age group, less education, and low income. The study participants with secondary education had

significantly higher score on general knowledge on TB. This showed education was an important determinant of general knowledge on TB in this study. The findings corroborate previous studies in Croatia,^[9] Ethiopia,^[10] Nigeria,^[12] and Pakistan.^[23] Therefore, young participants, less educated groups, and poor people should be targeted for TB awareness programs to improve their knowledge on TB. To reach these groups, educational strategies should be focused and adjusted accordingly. Unfavorable attitudes and practices regarding TB were significantly associated with less education, low income, and nuclear family. The findings corroborate with previous studies in Ethiopia^[11] and Tajikistan.^[26]

Limitations

In this study, we observed two limitations. First, the findings of this study cannot be generalized to all people in Navi Mumbai because only those patients who were treated in public health facilities were interviewed thus excluding patients from private health facilities. Second, there were no questions related to MDR, XDR-TB, or HIV in the questionnaire.

Conclusion

The study participants had good knowledge of TB but there were several misconceptions regarding the causes of TB that need to be clarified. Knowledge about TB was determined by age, level of education, and income. Attitude and practices regarding TB were related to level of income, education, and type of family. Health education session on TB should be tailored according to the sociodemographic characteristics of the population with special focus on young age group, illiterate, and poor people. All the sources of information like health-care workers, mass media, friends, or relatives who had TB in the community can be utilized to improve the existing level of knowledge and bring about a positive change in the practices of people regarding the disease in totality.

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