



Original Article

Public visibility of tuberculosis diagnosis and treatment facilities in rural Puducherry, mixed method design

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ABSTRACT

Objectives: To study the specific issues on the diagnosis and treatment to be addressed in TB advocacy, communication and social mobilization activities. Early diagnosis and initiation of appropriate treatment is the mainstay in the prevention and control of tuberculosis (TB). We present findings from an operational research study on visibility of TB diagnosis and treatment among people in rural Puducherry.

Materials and Methods: Study area and study setting: The present study was undertaken in the villages of Thirubhuvani Primary Health Center (PHC) in rural Pondicherry by the Department of Community Medicine, Sri Manakula Vinayagar Medical College. **Study design:** An exploratory sequential mixed method design where qualitative methods (Focus Group Discussion [FGD]) followed by quantitative methods (Community-based cross-sectional survey) were used. **Sample size and sampling: Qualitative:** FGD was conducted to assess the perceptions and practices of rural people related to TB. We conducted eight FGD, four each with men and women. It was held with the purposively selected men and women (8–12 members) from different socioeconomic strata. **Quantitative:** Probability proportional to size method was used to select 30 clusters from the villages of Thirubhuvani PHC. In each cluster, 12 households were selected by random walk method and head of the family who is assumed to act as decision maker in that household was interviewed using pre-designed and pre-tested questionnaire. However, we could study the required sample as calculated, the final sample studied was 348.

Results: Qualitative: As per the responses emerged from the FGD, four categories are symptoms and mode of transmission, treatment, problems faced, and others. The 12 codes emerged are symptoms, mode of spread, risk factors, availability, effect home remedies health system related, family and community, financial, advantages at government hospitals, media for awareness, and recommendation. **Quantitative:** Among the 348 people studied, 203 were male and 145 were female. The major source of information of TB received by the community was from family, friends, neighbors, and colleagues. We found that majority of them have correctly responded that weight loss (97.1%) and cough that lasts longer than 2 weeks (27.5%) as the symptoms of TB. However, they have also commented wrongly that rash as one the symptom (76.1%) of TB, the measures for preventing TB are by avoiding hand shaking (26.4) avoid sharing foods (74.7). Smokers and alcoholic are at-risk for TB infection. Most of the participants expressed that they will feel fear (95.1), sadness or hopelessness (94.8), embarrassment (96.8), shame (89.6), and surprise (65.2) if they have contacted TB. The participants also reported TB diagnosis and treatment are free of cost (95.1) and will approach health facility (96.8) if they had symptoms of TB. The 95% of them have informed that TB is curable and treatment is available at government hospital (97.7) and available free of cost (92.2).

Conclusion: Hence, a strategy for wide, consistent, and regular dissemination of information on TB is needed for better public visibility of TB diagnosis and treatment facilities in rural Pondicherry.

Keywords: Tuberculosis, Mixed method design, NTEP

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Table 1: Content analysis of participants' perceptions and practices of rural people related to tuberculosis.

Category	Codes	Items
Symptoms and mode of transmission	Symptoms	<ul style="list-style-type: none"> - Yellow Sputum collection in body/No adequate sleep/ loose stools - Continuous cough and cold for 1/2 weeks - Difficulty in breathing similar to asthma - Blood stained sputum will be present
	Mode of spread	<ul style="list-style-type: none"> - Thin built, fever, loss of appetite, and loss of weight - Contact with exhaled air, saliva, and close TB contact
	Risk factors	<ul style="list-style-type: none"> - Stamping the sputum on bare foot - Smoking, tobacco chewing, and alcoholism make males - Preponderant to TB, anyone can get affected even children - Females inhale smoke from cooking
Treatment	Availability	<ul style="list-style-type: none"> - Given in Govt. hospitals under supervision/private hospitals, - Free medicine/consumed for 6–8 months
	Effect	<ul style="list-style-type: none"> - Cured by taking proper medicines - Treatment to be started in the initial stage itself
	Home remedies	<ul style="list-style-type: none"> - Leaves of Indian mint - Essence from Indian coral tree - Warm milk along with <i>thumbai flower</i> for cough and cold - Palm rock sugar for cough and cold - <i>Tulsi, panangarkandu, and karpuravalli leaves</i>
Problems faced	Health system related	<ul style="list-style-type: none"> - Delay in ordering investigations and getting the reports - They do not tell that they are testing for TB - Results of are not revealed
	Family and community	<ul style="list-style-type: none"> - Isolated by family and relatives, relatives stop visiting the family - Discrimination and hated by the society - Isolated from others and relatives do not talk much
	Financial	<ul style="list-style-type: none"> - No money as he cannot work
Others	Advantages at Government hospitals	<ul style="list-style-type: none"> - Most of them treat on time - Nowadays, they speak kindly to patients
	Media for awareness	<ul style="list-style-type: none"> - Provide awareness through TV adds, display pamphlets and show - TB-related videos in villages - House to house distribution of pamphlets with messages on the symptoms and treatment of tuberculosis
	Recommendation	<ul style="list-style-type: none"> - Meet staff nurse if cough and sputum more than 10 days - Continue medicines till doctor advises to stop - Cover mouth before coughing or speaking - Use chappals while walking and not on bare foot - Family members should maintain cleanliness

TB: Tuberculosis

INTRODUCTION

Tuberculosis (TB) affects the most productive age group and the resultant economic cost for society is high.^[1] Early diagnosis and initiation of appropriate treatment is the mainstay in the prevention and control of TB. The effectiveness of this intervention depends to a large extent on the treatment seeking practices of the patients and the efficiency of the health service providers in diagnosing and initiating appropriate treatment regimens. The awareness about the disease plays a major role in the health seeking

practices. The study done in Puducherry reflects that the knowledge about TB regarding mode of transmission is high, but the awareness about TB diagnosis and treatment is limited.^[2] Public health education, to make the people aware about preventive aspects of the disease, is important.^[3] This is also one of the agenda for operational research under Revised National TB Control Program.^[4] In this paper, we present findings from an operational research study on visibility of TB diagnosis and treatment among people in rural Puducherry. The objectives of the project were to study the specific issues on the diagnosis and treatment issues to

be addressed in TB Advocacy, communication, and social mobilization activities.

MATERIAL AND METHODS

Study area and study setting

The present study was undertaken in the villages of Thirubhuvani Primary Health Center (PHC) in rural Puducherry, having total population of 34,361. It is the field practice area of the Department of Community Medicine, Sri Manakula Vinayagar Medical College (SMVMCH). The population of this region consists of diverse type, majority of them work in industry, and agriculture and is well connected with city. The tertiary care services are available at SMVMCH which is 3 km from Thirubuvani, PHC.

Study design

An exploratory sequential mixed method design where qualitative methods focus group discussion (FGD) (GI) followed by quantitative methods (Community-based cross-sectional survey).

Sample size and sampling

Qualitative study

FGD was conducted to assess the perceptions and practices of rural people related to TB. We conducted eight FGD, four each with men and women. It was held with the purposively selected men and women (8–12 members) from different socioeconomic strata.

Quantitative study

Considering the rough estimate of study as 0.5, 95% confidence interval, 7.5% precision and with design effect of 2, the minimum sample size required is 342 (Calculated using Epi_Info (version 6.04d) software package). Probability proportional to size method was used to select 30 clusters from the villages of Thirubhuvani PHC. In each cluster, 12 households were selected by random walk method and head of the family who is assumed to act as decision maker in that household were interviewed using pre-designed and pre-tested questionnaire. However, we could study the required sample as calculated that the final sample studied was 348.

Data collection

Eight FGD were conducted and each consist of about 6–12 participants and lasted for 45–60 min. The FGD was conducted in the local language Tamil by the first author who is trained in qualitative research. The FGD was audio

Table 2: Demographic characteristics of community.

Characteristics	(n=348)
Age distribution	
<30	45 (12.2)
31–60	236 (68.4)
>61	67 (19.4)
Gender distribution	
Male	203 (58.3)
Female	145 (41.7)
Education	
No schooling	106 (30.5)
Elementary	129 (37.1)
High school	97 (27.9)
College	15 (4.3)
Higher education	1 (0.3)
Current occupation status	
Yes	167 (48.1)
No	181 (51.9)
Below poverty line	249 (71.6)
Above poverty line	95 (27.3)
Not known	4 (1.1)
Communities' source of information about tuberculosis	
Newspapers and magazines	15 (4.3)
Radio	8 (2.3)
TV	50 (14.4)
Brochures, posters and other printed materials	21 (6.0)
Health workers	4 (1.1)
Family, friends, neighbors and colleagues	232 (66.7)
Others	18 (5.2)

recorded by the social worker. The FGD was conducted in a common venue as selected by the participants, where all members could attend. The FGD was concluded after sharing the summarized findings and confirming the same with the participants. At the end of the FGD, refreshments were provided to the participants as a token of appreciation.

The information obtained from FGD was used for development of locally relevant education material emphasizing on diagnostic and treatment facilities in the form of flip book for health education.^[5]

The questionnaire was prepared in English and was pilot tested among 20 participants to check the wording and the appropriateness of the questions in the questionnaire. After obtaining informed consent, trained social workers administer the questionnaire. The participant's privacy was ensured before conducting the one to one interview. Apart from sociodemographic information of respondent, the information on awareness about signs and symptoms of TB and its source of treatment was also obtained. Five percent of questionnaires was rechecked by post-graduates of department of community medicine to ensure the quality of data.

Ethical principles

Ethical principles such as obtaining consent from the respondents and ensuring confidentiality were adhered to, throughout the project. Ethical clearance was obtained from the Institutes Ethical Committee.

Data analysis

Quantitative data were entered and analyzed using Epi_info (version 3.4.3) software package. Descriptive statistics using table of frequency distribution was used to summarize sociodemographic characteristics and the level of knowledge, attitudes, and practices toward TB.

FGD data were transcribed in English, manually coded, and analyzed for 2 months. The content analysis was manually done. The units of the analysis were statements under a given code. Twenty-three codes were clubbed under eight broad categories. The content analysis was performed by the two faculty of department of Community Medicine trained in qualitative research. These findings were reviewed by the

principle investigator, who is working in the local area for the past 9 years.

RESULTS

Findings of FGD

As per the responses emerged from the FGD, items against the codes and categories are expressed in [Table 1]. The four categories are symptoms and mode of transmission, treatment, problems faced, and others. The 12 codes emerged are symptoms, mode of spread, risk factors, availability, family and community, financial, advantages at government hospitals, media for awareness, and recommendation.

Findings of survey

A total of 348 people were studied during survey. Out of which 203 were male and 145 were female (mentioned in [Table 2]). The majority of them are in age group between 31 and 60 years. Among them, 106 (30.5%) have not attended

Table 3: Communities' knowledge about TB symptoms.

Variables	Total n=348	Variables	Total n=348
What are the signs and symptoms TB? (multiple responses)		What would be your reaction if you were found out that you have TB? (multiple responses)	
Rash	265 (76.1)	Fear	331 (95.1)
Cough that lasts longer than 2 weeks	96 (27.5)	Surprise	227 (65.2)
Coughing up blood	50 (14.3)	Shame	312 (89.6)
Other symptoms	92 (26.4)	Embarrassment	337 (96.8)
Weight loss	338 (97.1)	Sadness or hopelessness	330 (94.8)
Fever	176 (50.5)	Who would you talk to about your illness if you had TB? (multiple responses)	
Chest pain	182 (52.2)	Doctor or other medical worker	339 (97.4)
How can a person prevent from getting TB? (multiple responses)		Spouse	2 (0.5)
Avoid shaking hands	92 (26.4)	Parent	290 (83.3)
Covering mouth and nose when coughing or sneezing	309 (88.7)	Children	130 (37.3)
Avoid sharing dishes	260 (74.7)	Other family member	44 (4.9)
Through good nutrition	215 (16.3)	Close friend	3 (100.0)
In your opinion, who can be infected with TB? (multiple responses)		If you had symptoms of TB, at what point would you go to the health facility.(multiple responses)	
Anyone	165 (47.4)	When treatment on my own does not work	259 (74.4)
Only poor people	6 (0.9)	When symptoms that look like TB signs last for 3-4 weeks	89 (25.6)
Only alcoholics	202 (58.0)	How expensive do you think TB diagnosis and treatment is in this country? (multiple responses)	
Only drug users	7 (2.0)	It is free of charge	331 (95.1)
Only people living with HIV/AIDS	15 (4.3)	It is reasonably priced	17 (4.9)
Only by smokers	225 (64.6)	What would you do if you thought you had symptoms of TB? (multiple responses)	
Do you think you can get TB?		Go to health facility	337 (96.8)
Yes	163 (46.8)	Go to pharmacy	11 (3.1)
No	185 (53.2)	Go to traditional healer	8 (80.0)

TB: Tuberculosis

school. The major source of information of TB received by the community was from family, friends, neighbors, and colleagues.

As mentioned in [Table 3], it was found that weight loss (97.1%) was the most common symptom of TB followed by cough that lasts longer than 2 weeks (27.5%) or coughing up blood (14.3%). Majority 88.7 % have mentioned will cover the mouth and nose while coughing or sneezing. The participants also mentioned that TB can be prevented by avoiding hand shaking (26.4) and sharing of foods (74.7) and rash as symptom of TB (76.1%).

In [Table 4] depletes the communities' visibility about diagnosis and treatment, 95% have informed that TB is curable and treatment is available free of cost (92.2) at government hospital (97.7). Regarding the duration of TB treatment, 32.6% have mentioned as 6–8 months.

DISCUSSION

Among the 348 people studied, 203 were male and 145 were female. The majority of them are in age group between 31 and 60 years. Among them 106 (30.5 %) have not attended school and 71.6% belong to below poverty line. The major source of information of TB received by the community was from family, friends, neighbors, and colleagues. We

found that majority of them have correctly responded that weight loss (97.1%) and cough that last longer than 2 weeks (27.5%) as the symptoms of TB. They also informed the TB be can be prevented by following the cough hygiene such as covering mouth and nose when coughing or sneezing (88.7). However, they have wrongly mentioned that rash as one of the symptom (76.1%) of TB, the measures for preventing TB are by avoiding hand shaking (26.4), avoid sharing foods (74.7). Smokers and alcoholic are at-risk for TB infection. Most of the participants expressed that they will feel fear (95.1), sadness or hopelessness (94.8), embarrassment (96.8), shame (89.6), and surprise (65.2) if they have contacted TB. The participants also reported TB diagnosis and treatment are free of cost (95.1) and will approach health facility (96.8) if they had symptoms of TB. Ninety-five percentages of them have informed that TB is curable and treatment is available at government hospital (97.7) and available free of cost (92.2). Regarding the duration of TB treatment, 41.8 % said more than one year and 32.6% as 6–8 months. Seventy-four percentages have informed that they would go to the health facility when treatment on my own does not work.

Regarding the visibility about diagnosis and treatment, 96.5% of them have mentioned that TB is curable. Thirty-two percentages have reported that the treatment for TB is for 6–8 months and free of cost (20%). Almost, 98% have mentioned that specific drugs are given at health center for TB and 8.9% have heard about TB. In a study conducted by Chinnakali *et al.* has also mentioned, the awareness about TB diagnosis and treatment is limited.^[2]

In this study, the awareness about TB is good except for some of the misconception present among the participants. Majority of response were correct, such as the common symptoms are weight loss, cough for more than 2 weeks or cough with blood, and chest pain. However, they have also mentioned rash as a symptom of TB. In regards to the prevention of TB, the participants have reported that by practicing cough hygiene like closing the mouth while coughing can prevent transmission of TB. They have also reported the by avoiding sharing the food and shaking hands can prevent TB transmission. Chinnakali *et al.*, in their study, have also mentioned that the awareness of TB is high in Puducherry that it could be due to high literacy.^[2] A study done by Kar and Logaraj have reported that the knowledge about the transmission is only 20% and mentioned that literacy as a key factor.^[6] The studies by Das *et al.*, Purohit *et al.* and Yadhav *et al.* have also show that literacy is a key deciding factor for the level of awareness.^[7-9] Nearly half (47%) of them have correctly mentioned that anyone can get infected with TB. Smokers (64.6%) and alcoholic (58%) are more prone for TB infection. In an average 95% of the participants expressed fear, embarrassment, sad, and shame, if they were found out to be having TB. The studies by Das

Table 4: Communities' knowledge and visibility about diagnosis and treatment.

Variables	Total (n=348)
TB is Curable	336 (96.5)
Heard about DOTS	32 (8.9)
Where all does the diagnosis for TB available? (multiple responses)	
District Government hospital	340 (97.7)
PHC	97 (27.8)
Private hospital	71 (20.4)
Do you have to pay for TB drugs?	
Yes	20 (5.8)
No	320 (92.2)
Do not know	8 (2.2)
What is the duration TB treatment? (multiple responses)	
6–8 months	113 (32.6)
More than 1 year	145 (41.8)
Lifelong	90 (25.6)
Need more information about TB	339 (97.4)
TB is cured by specific drugs given by health center	344 (98)
If you had symptoms of TB, at what point would you go to the health facility? (multiple responses)	
Treatment on my own does not work	259 (74.4)
Symptoms last for 3–4 weeks	89 (25.6)
TB: Tuberculosis	

et al. and Yadhav *et al.* have reported that stigma associated with the disease will lead to discrimination of TB patients.^[7,9]

The important limitation of the study involving survey technique is self-reporting by the participants. The accuracy of the respondent's response on the knowledge, attitude, and practice cannot be verified. In the present study, some of responses could have been influenced by previous encounter with TB patients.

CONCLUSION

The community had basic awareness about TB, there are still lots of gaps in clear understanding of TB which is to be addressed. Majority of them felt that the effective source for transmission. Hence, a strategy for wide, consistent, and regular public visibility of TB diagnosis and treatment facilities in rural Puducherry.

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Declaration of patient consent

Institutional Review Board (IRB) permission obtained for the study.

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Yes.

Conflicts of interest

There are no conflicts of interest.

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