Research Article

Knowledge and health seeking behaviour of tuberculosis patients in Kerala, India

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ABSTRACT

Background: Patients confront several problems in timely and effective utilization of TB health facilities which have often delayed diagnosis of TB. It is hence the need of the hour to look beyond the case detection rates towards other factors that can promote early diagnosis.

Methods: A community-based cross-sectional study was conducted among newly diagnosed smear positive pulmonary tuberculosis patients aged ≥ 15 years on the Intensive Phase of treatment. A pretested semi-structured questionnaire was used to study knowledge, stigma, health seeking behaviour and other factors.

Results: The predominant symptom for seeking care was cough (93.0%). 45.7% of patients sought the services of a health care provider within 2 weeks. Modern medicine was the preferred system for 94.7% of the patients. The majority (58.6%) of the patients consulted a private health facility. Illiterates and Below Poverty Line patients preferred government facilities. The average number of consultations before diagnosis was 3.11 ± 1.9 . 34.1% had adequate knowledge about tuberculosis and women had a significantly higher knowledge score. Low per capita income, smoking and alcohol use, cough alone, cough with other symptoms, history of TB in Family, distance more than ≥ 5 km to health facility showed significant association with delayed health-seeking action (>14 days).

Conclusions: Private practitioners and private hospitals were the predominant health providers preferred by the study subjects for the first consultation. Delayed health seeking action was probably due to the presence of a cough alone and coughs with other symptoms, history of tuberculosis among the family members and increased distance to TB health facility.

Keywords: Health seeking behaviour, Tuberculosis, Knowledge, Stigma, Patient delay

INTRODUCTION

Tuberculosis (TB), the ancient scourge of man, continues to be a major global public health problem in the twenty-first century. According to World Health Organization (WHO), one-third of the world's population is estimated to have *Mycobacterium tuberculosis*. The Revised National Tuberculosis Control Programme (RNTCP), based on the internationally recommended Directly

Observed Treatment Short-course (DOTS) strategy, launched in 1997 has expanded across the country in a phased manner. Full nationwide coverage was achieved in March 2006.

In spite of its impressive performance in terms of case detection and cure rates, the programme has many challenges due to the different health seeking pattern. Patients with undiagnosed pulmonary TB predominantly

act as reservoirs for transmission and delay in the diagnosis may worsen the disease and the chances of transmission of TB in the community.¹ It also increases the patient's expenditure on the disease.

Diagnosis of tuberculosis can be delayed when patients postpone seeking health care until much after the onset of symptoms. Therefore, the present study was undertaken to assess the knowledge, stigma regarding tuberculosis, health seeking behaviour and influencing factors among tuberculosis patients.

METHODS

A community-based cross-sectional study was conducted in Kozhikode district of Northern Kerala during 2012-2013. Subjects were newly diagnosed sputum smear positive pulmonary tuberculosis patients aged ≥ 15 years who were in the Intensive Phase of DOTS treatment. Seriously ill patients were excluded from the study. Cluster sampling technique was adopted. Each of the Tuberculosis Unit (TU) was considered as a cluster and, four units were selected by Simple Random Sampling.

Survey instrument

Details of newly registered patients were obtained from Senior Treatment Supervisors and data was collected using a pretested questionnaire by personal interview method. To assess the knowledge about tuberculosis a total of seven questions were asked. Scoring was done based on the number of correct responses according to the RNTCP health education guidelines. To assess the stigma, six questions were asked. Variables regarding influencing factors were also included.

Data analysis

Data was analyzed using appropriate statistical tests for descriptive statistics, univariate and multivariate analysis. The level of significance was set at $P \leq 0.05$.

RESULTS

A total of 302 patients were studied. Majority (89.7%) of patients were diagnosed at government health facilities.

Clinical aspects

The average number of symptoms at first presentation was 1.83 (range: 1-5). Cough was the single most prevalent symptom (93%). Fever was the second most common presenting complaint (47.4%) and haemoptysis was present in 10.9% subjects.

More than half of the patients (52.3%) reported at least two TB symptoms. Majority (45.7%) of patients consulted a health care provider within 2 weeks of symptom onset. Over 41% of patients had a higher degree of sputum smear positivity (+2 or 3+). Consulting

a health care provider without resorting to self-medication was practiced by majority (90.1%). Self-medication was more among male patients (10.4%) than females (8.5%). Severity of the symptom predominantly motivated to seek medical advice (59.6%).

Table 1: Interval between each visit.

Order of visit	Interval (days)	
	Mean	(SD)
1 st and 2 nd visit	11.75	(10.23)
2 nd and 3 rd visit	8.60	(7.24)
3 rd and 4 th visit	5.93	(4.07)
4 th and 5 th visit	6.40	(5.84)
5 th and 6 th visit	6.27	(4.64)
6 th and 7 th visit	6.24	(4.47)

Preference of health facility

Modern medicine was preferred (94.7%), especially private providers (58.6%). However, 5.3% of patients consulted other systems of medicine (AYUSH). Accessibility was found to be the most decisive factor (50.3%) for first contact.

Only 18.5% of patients were diagnosed at first visit itself. 284(94.04%) patients visited the government facility at least once before the diagnosis. Patients who first consulted a government provider were diagnosed at first visit itself than those who visited a private provider (37.6% Vs 5.1%) $\chi^2 = 51.279$; $p < 0.001$.

The duration of each successive visit is depicted in Table 1. As the number of visits increases, there is no change in duration between the visits. The mean number of doctor consultations before diagnosis was 3.1 ± 1.9 . More than half of the patients (54.7%) had to visit three or more health facilities before being diagnosed.

The mean visits were higher among patients who consulted a private provider first (3.54) and in patients who consulted a non-allopathic doctor (4.69). The mean consultation was similar for males (3.13) and females (3.04). The median direct cost incurred due to the illness was Rs.500 (range 0 – 5000) which constitutes about 11% of the total family income.

Patients who first consulted a government provider had spent significantly lesser (89.6% Vs 45.8%) ($P < 0.001$).

Access to and use of health services

271 (89.7%) of the patients were diagnosed at a government facility. 40.1% of patients visited the diagnosed facility on the basis of referral. Other reasons were confidence in getting cured (38.7%), and accessibility (9.9%). The average distance between the house and the nearest TB centre was 3.6 ± 1.8 Km. It was lesser in the urban area (3.39 km) than in rural area

(3.85km). 55% of subjects lived within 3 kilometres distance from a TB centre and it was noted that 5.8% of

the urban population and 7.8% of the rural population had to travel ≥ 7 km.

Table 2: Knowledge about TB among study subjects.

Response to questions	Total (n=302)	Men (n= 231)	Women (n= 71)	P value
		No (%)	No (%)	
Cause of TB				
Germ/bacillus	90	58 (25.1)	32 (45.1)	0.001*
Others	212	173 (74.9)	39 (54.9)	
Is TB transmissible				
Yes	251	186 (80.5)	65 (91.5)	0.03*
No	51	45 (19.5)	6 (18.5)	
Mode of transmission				
Droplet spread	215	159 (68.8)	56 (78.9)	0.102
Others	87	72 (31.2)	15 (21.1)	
Possible to cure TB				
Yes	290	221 (95.7)	69 (97.2)	0.568
No / unknown	12	10 (4.3)	2 (2.8)	
Knowledge of TB symptoms				
Yes	271	204 (88.3)	67 (94.4)	0.142
No	31	27 (11.7)	4 (5.6)	
Do you know that there is a vaccine				
Yes	66	44 (19)	22 (31.0)	0.033*
No/ do not know	236	187 (81)	49 (69.0)	
Duration of treatment				
Correct	290	220 (95.2)	70 (98.6)	0.206
Wrong	12	11 (4.8)	1 (1.4)	

Table 3: Subjects according to stigma score.

Stigma score	No.	%
≤ 3	89	29.5
4-6	157	52.0
≥ 7	56	18.5
Total	302	100

Bus was the primary modality of transport (71.5%) to the health facility, followed by two wheeler (14.9%) and walking (8.3%). 86.8% of patients were able to reach the health facility within a half hour travel indicating the close proximity of health facilities to patients. Delayed consultation was defined as patients consulting a health facility after 2 weeks of symptoms. 43% (104/241) patients delayed because they did not perceive the symptoms as serious. Other reasons were job constraints (16.05%) and smokers cough (14.40%).

Knowledge

280 (92.7%) patients had heard of TB prior to diagnosis. The mean knowledge score was 4.88 ± 1.46 . Majority 199 (65.9%) of patients had an inadequate knowledge score. Women had a higher score than men (5.37 and 4.72

respectively, $p=0.001$). Only 90/302 knew that TB was caused by a germ and of these women were more knowledgeable than men ($p=0.001$).

Majority knew that TB was infectious and more women reported that it is communicable as compared to men ($P=0.03$). Only 66/302 patients knew that there is a vaccine and of these women were more aware than men ($p=0.033$). Regarding the mode of transmission, cure of TB, symptoms of TB and duration of treatment even though a number of women were more erudite than men the difference was not statistically significant (Table 2).

Stigma about tuberculosis

It was found that mean stigma score was 4.56 ± 2.65 . The mean score for males was 4.56 ± 2.73 and for females was 4.59 ± 2.36 . High stigma score (≥ 7) was seen among 18.5% of the subjects which indicates that stigma is established in tuberculosis (Table 3).

Factors associated with delayed consultation

Older age group and male patients showed delayed health care seeking behaviour. More men postponed seeking care than women (56.7% Vs 46.5%). Though the sample

size is low, delayed health-seeking action is noted among Christians (66.7% of were delayed). The delay was noted among illiterate patients (57.1% Vs 54.1%), employed (57.3%), and from three generation families. A

significant longer patient delay was seen among patients whose per capita income was low (60.0% Vs 48.3%) (p=0.041).

Table 4: Factors associated with delayed consultation.

Characteristic	>14 days N (%)	≤14 days N (%)	OR (95%CI)	P value#
Age (Years)				
15 - 30	17 (41.5)	24 (58.5)	1	0.207
31 - 60	112 (56.3)	87 (43.7)	1.82 (0.92-3.59)	
≥ 61	35 (56.5)	27 (43.5)	1.83 (0.82-4.07)	
Gender				
Male	131 (56.7)	100 (43.3)	1	0.130
Female	33 (46.5)	38 (53.5)	0.66(0.39-1.13)	
Religion				
Hindu	113 (56.8)	86 (43.2)	1	0.217
Muslim	43 (47.8)	48 (52.7)	0.68 (0.41-1.12)	
Christian	8 (66.7)	4 (33.3)	1.52 (0.44-5.22)	
Educational Status				
Literate	152 (54.1)	129 (45.9)	1	0.787
Illiterate	12 (57.1)	9 (42.9)	1.13 (0.46-2.77)	
Occupation Status				
Employed	125 (57.3)	93 (42.7)	1	0.088
Unemployed	39 (46.4)	45 (53.6)	0.64(0.39-1.07)	
Type of family				
Nuclear	98 (52.7)	88 (47.3)	1	0.540
Joint	33 (53.2)	29 (46.8)	1.02 (0.57-1.82)	
Three generation	33 (61.1)	21 (38.9)	1.41 (0.76-2.62)	
Per capita income				
>1250	71 (48.3)	76 (51.7)	1	0.041*
≤1250	93 (60.0)	62 (40.0)	1.61 (1.02-2.53)	
Alcohol history				
No	81 (48.5)	86 (51.5)	1	0.024*
Yes	83 (61.5)	52 (38.5)	1.69 (1.07-2.69)	
Smoking history				
No	67 (45.9)	79 (54.1)	1	0.005*
Yes	97 (62.2)	59 (37.8)	1.94 (1.23-3.07)	
Presenting Symptom				
No cough	4 (19.0)	17 (81.0)	1	0.000*
Cough alone	48 (47.5)	53 (52.5)	3.85 (1.21-12.24)	
Cough with other symptom	112 (62.2)	68 (37.8)	7.00 (2.26-21.67)	
History of TB in Family				
No				0.001*
Yes	139 (51.1)	133 (48.9)	1	
	25 (83.3)	5 (16.7)	4.78 (1.78-12.87)	
Distance to TB health facility				
<5km	121 (50.6)	118 (49.4)	1	0.012*
≥5km	43 (68.3)	20 (31.7)	2.09 (1.16-3.77)	
Knowledge Score				
Adequate (>5/7)	49 (47.6)	54 (52.4)	1	0.091
Inadequate (≤5/7)	115 (57.8)	84 (42.4)	1.51 (0.94-2.43)	

*shows the significant P value

History of smoking (62.2%, p=0.024) and alcohol use (61.6%, p=0.005) were significantly associated with patient delay. Longer delay was also noted among

patients presenting with cough and associated symptoms like fever, weight loss, chest pain, weakness compared to patients with no cough (62.2% Vs 19.0%)(p=0.000) and

those with a family history of tuberculosis (83.3%). The delay was noticed among patients who lived at a distance ≥ 5 km (68.3% Vs 50.6%) ($p=0.01$). Subjects with low knowledge score ($\leq 5/7$) delayed seeking care for their chest symptoms (57.8% Vs 47.6%) (Table 4).

Multivariate analysis showed that presence of cough alone and cough with other symptoms, history of TB in family and distance from TB health facility are significantly associated with patient delay.

Table 5: Multivariate analysis of risk factors for delayed consultation.

Covariate	Adjusted odds ratio	95 % CI	P- value
Per capita income			
>1250	1		
≤ 1250	1.45	0.88-2.37	0.144
H/O Alcohol intake			
No	1		
Yes	1.31	0.71-2.41	0.385
H/O Smoking			
No	1		
Yes	1.59	0.87-2.92	0.134
Presenting symptom			
No cough	1		
Cough alone	3.87	1.16-12.87	0.028*
Cough with other symptom	7.05	2.17-22.83	0.001*
History of TB in Family			
No	1		
Yes	4.35	1.53-12.31	0.006*
Distance to TB health facility			
<5km	1		
≥ 5 km	1.95	1.03-3.66	0.039*

*shows the significant P value

DISCUSSION

Cough was the main presenting symptom. This is consistent with a study by Lawn SD et al. at Ghana (94%).² In other studies a cough as a symptom, extended from 61% - 99.1%.³⁻⁸ In present study, (45.7%) of patients approached the health facility within two weeks of symptoms. Under the RNTCP, as TB is suspected among those having the cough for ≥ 2 weeks, the results suggest low level of prompt treatment seeking behaviour.

A study by Lienhardt C et al reported that 86% of patients had sought medical consultation within 2 weeks and a study by Esther N et al found that 38.35% delayed seeking care for more than 30 days. Compared to the study done in Nepal by Bam TS et al where >80% of patients had a higher degree of sputum positivity, our study showed a lower percentage (41%) of patients with sputum smear positivity ($>2+$).⁹⁻¹¹ Studies done at Sikkim by Tobgay KJ et. al and Huong NT et al at Vietnam revealed that (68.4%) and (15.7%) of patients respectively had self-medications.^{12,13} Rajeswari R et al found that 6% of patients resorted to self-medication and 7% to pharmacies, which was similar to the findings in the present study.⁶ This finding favours the early diagnosis of the disease.

More than half (58.6%) of the subjects first approached the private health facility for their tuberculosis symptoms. Uplekar et al. found that in the Pune city, 60% of individuals with chest symptoms first approached a private provider and in another study by the same author, it was found to be 86%.^{14,15} Present finding is consistent with other studies by Kelkar-Khambete A et al at Pune 83% and Nair N et al in the SEAR 60-70% and Rintiswati N et al.¹⁶⁻¹⁸

However, studies from South Sudan and Hong Kong reported lower figures of 17% and 42.6% respectively. Accessibility was found to be the main reason for approaching the health facility. Another study by Salaniponi FML et al at Malawi also found that accessibility was the reason (55%) for the preference of health facility.^{7,19,20} The proportion of patients diagnosed at first consultation (18.5%) was much lower than other studies by Rajeswari R et al, at Tamil Nadu (22%) and 40% in the study by Schneider D et al at the Republic of Armenia. It is imperative to explore the factors affecting failure to diagnose at the first visit.^{3,6}

Identification of these factors would be important from the programme perspective. However, a good proportion of patients who approached a government health facility

were diagnosed at their first visit itself. The numbers of visits were found to be high if they have visited a private health facility first or a doctor other than modern medicine. This indicates chances of lesser delay in government health facility and under modern medicine. The average number of consultations (3.1) was found to be lower than other studies by Bawankule S et al., at Wardha District 4.3, Lawn SD et al., at Ghana 4.2 and, Ahmad RA et al., at Indonesia 4.^{2,21,22}

The amount spent by patients in our study is higher than other studies were done in India by Rajeswari R et al [Rs. 359 (range 0- 5000)] and Tobgay KJ et al., Rs 220 (range Rs 0-5120) at Sikkim.^{6,22} This could be because a sizeable proportion of patients visited private facilities and it also depends on the diagnostic and treatment practices of private practitioners. Following the RNTCP guidelines for diagnosis and treatment would lead to a reduction in the direct cost. However, this amount is lower than a study by Bawankule S et al., at Wardha District (Rs. 1450).²¹

In present study, the majority of patients were diagnosed at government health facilities, which goes to show that government Designated Microcopy Centers (DMCs) play a major role in the diagnosis of TB. This may be due the high number of DMCs in government sector acting as a point of entry into the control programme. Living close to the tuberculosis health facilities was the prime reason cited by patients for visiting the facility from where they were diagnosed.

A study by Rajeswari R et al. found that 42% of the patients lived within 2 km of a health facility.⁶ In a study at Tamil Nadu by Selvam JM et al. found 22.6% of the patients reached the health facility by walking.²³

Majority of the subjects were able to reach the facility in 30 minutes which is much higher than other studies by Ngamvithayapong J et al at Thailand where half of the patients spent 30 minutes or less travelling to the hospital and in another study by Mesfin MM et al at Ethiopia where 51% of patients could reach the health facility in ≤ 40 min.^{24,25} The reasons stated for the delayed consultation were minor which suggest that the health education must be given importance.

A large number of (92.7%) of patients have heard about tuberculosis before being diagnosed in this study. Other studies by various authors have also found the awareness about tuberculosis to be ranging from 83% (in Southwest Ethiopia) to 99.1% (in Delhi).^{26,27}

Age ≤ 30 yrs showed a lower patient delay which reflects the good health seeking behaviour of younger age group. Similar finding was observed by Rajeswari R et al that age ≥ 45 years had a longer patient delay.⁶ Males were found to delay more than females, which is consistent with other studies by Kelkar-Khambete A et al at Pune and Rajeswari R et al at Tamil Nadu.^{6,16} However, a

study in Brazil²⁸ found that female gender is associated with long patient delay. Illiterates were observed to have a significant association with patient delay in studies done in Tamil Nadu, Tanzania, Gambia, Ethiopia.^{6,9,29,30}

Contrary to our findings studies at Colombia, Brazil found that unemployment was associated with patient delay.^{28,31} Lose of wages and schedules at the workplace may serve as a deterrent to seeking care, hence causing delay. Lower per capita income was found to be a significant risk factor for patient delay in other studies by Rajeswari R et al and Ford CM et al.^{6,32}

Smokers tend to attribute cough to smoking while, alcoholics show poor health seeking behaviour. As a result of these, they do not seek timely medical help. This is reflected in our study too, as the duration and proportion of delay are more among alcoholics. Patient delay was more among alcohol users in other studies by Tobgay KJ et al at Sikkim, and Kiwuwa MS et al at Uganda.^{12,33}

It is possible as cough itself is a common, non-specific symptom which may more likely be attributed to common conditions such as asthma, sinusitis or postnasal drip by patients. This leads to delayed care seeking. A study by Machado ACFT et al at Brazil also found that presence of cough is associated with long patient delay.²⁸

In present study, patients delayed medical attention if there was any positive family history. This was in contrast to results reported in the literature, where it was found that a history of TB in the family would decrease the patient delay.

After multivariate analysis the significant risk factors independently associated with patient delay were, presenting symptom of cough alone (AOR 3.87, 95%CI: 1.16-12.87), cough with other associated symptoms (AOR 7.05, 95% CI: 2.17-22.83), history of TB in family (AOR 4.35, 95% CI: 1.53-12.31), distance to health facility ≥ 5 km (AOR 1.95, 95%CI : 1.03-3.66) (Table 5)

CONCLUSION

Private practitioners and private hospitals were preferred by the study subjects for the first consultation. Illiterates and below poverty line patients preferred consulting government health facilities first for their chest symptoms.

The long patient delay was probably due to the presence of a cough alone and cough with other symptoms, history of tuberculosis among the family members and increased distance to TB health facility.

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