

Role of Private Sector in Providing Tuberculosis Care: Evidence from a Population-based Survey in India

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ABSTRACT

Background: In India, a large segment of the population seeks health care services from individual or institutional private health-care providers for health care. We analyzed a nationally representative data to identify the role of private providers in delivering health care for patients with tuberculosis. **Materials and Methods:** The primary data source for the present analysis was the 60th round of the National Sample Survey. Distribution frequencies were used to analyze the distribution of key sociodemographic variables and multiple logistic regression was used to analyze the association between these variables and healthcare seeking behavior. **Results:** A sample of 2203 respondents who had received ambulatory care for tuberculosis, and 4568 respondents who had received inpatient treatment were analyzed. About half of the respondents had attended private facilities for TB care. Sociodemographic variables such as paediatric age group, females, higher level of education, and economic groups were associated with attendance at private sector. Dissatisfaction with services in government facilities was cited as the main reason for preferring private facilities. **Conclusions:** Private providers play an important role in providing health care services to a large proportion of patients with tuberculosis. There is a need for innovative measures to increase participation of the private sector in the national TB control program and to improve the quality of services in government facilities.

Key words: NSS, Private providers, Reasons, Source of treatment, Tuberculosis

INTRODUCTION

Globally, there were an estimated 9.27 million incident cases of TB in 2007. Most of the estimated cases were in Asia (55%), with India contributing 2 million of the incident cases in 2007. The case detection of new smear-positive cases in Directly Observed Treatment Short Course (DOTS) programmes reported a minor improvement between 2007 and 2008, which was attributed primarily to the small increase in the case detection in India and Pakistan. Despite this, it has been reported that an estimated 19% of the new smear-positive cases in India remained undetected by the DOTS Program in 2007, the highest globally.^[1] An important cause for these missed cases in India is because, many patients with symptoms of TB, including the very poor, seek and receive care from a wide variety of health care providers outside the network of national TB program services.

In India, a large segment of the population turns to individual or institutional private health care providers (PPs) for health care. The private sector plays an important role in providing health care services.^[2] These are often the first point of contact for a large number of rich and poor patients and manage a significant number of patients with diseases of public health importance.

Realizing the importance of the private health care providers in delivering curative services to the majority of the population in India, the TB programme in India has tried to include these providers into the realms of the national TB control efforts. Several initiatives have been undertaken not only to increase the involvement of the private sector in TB control, but also to help align their practices with national and international standards of TB care.^[3]

Previous studies from India have reported that two-thirds of the TB patients visit private practitioners when they first develop chest symptoms, and more than half are diagnosed by the private doctors.^[4-7] However, these studies were conducted in specific areas and do not provide a national representation of the TB care seeking behavior.

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This study has used a large, nationally representative National Sample Survey (NSS) 60th Round data to identify the care seeking behavior of TB patients in India. The study objectives were to identify the role of private providers in delivering ambulatory and inpatient care for respondents with tuberculosis; to identify the factors that are associated with healthcare seeking behavior from the private sector; and to identify the reasons for seeking these services from private sector.

MATERIALS AND METHODS

Data

The primary data for this study was obtained from the 60th round of the NSS. This was a nationally representative survey conducted by the National Ministry of Health and Family Welfare (MOHFW) from January to June 2004. The data were collected by trained staff from 47,302 rural and 26,566 urban households. Structured questionnaires were administered and information on the sociodemographic factors, present or existing ailments, as well as health care seeking behavior were collected. The survey also collected data on utilization of private and public health care services—inpatient hospitalisation during the 365 days prior to the date of interview and outpatient visits during the 15 days prior to interview. Further details can be found in the final report of the NSS 60th Round.^[8] The survey was approved by the ethical review board of MOHFW.

Outcome

For the purpose of the present analysis, all individuals who had reported tuberculosis as their ailment and for whom information was available on all the variables were included in the final sample. The dependent variable was a binary variable indicating the source of TB care, i.e., public or private sector. This was recorded as reported by the respondent and was collected both for individuals who sought medical services as outpatients and those who received health care services as inpatients.

Statistical analysis

The survey data were analyzed using the primary sampling units and national weights as determined by NSS. Due to the nature in which the data were collected, the analysis for outpatient and inpatient TB care was conducted separately. The distribution of key sociodemographic variables in the study population was done using distribution frequencies of the data. Multiple logistic regression with “source of treatment” as a dependent variable was used to analyze the

strength of association between different sociodemographic variables and care seeking behavior, adjusting for potential confounders such as age, sex, urban/rural status, education, caste, religion, and economic standard of living. These confounding variables were identified from a review of previous studies.^[4-7] The strength of association was estimated by calculating the odds ratios (OR) with 95% confidence intervals (CI). A *P* value of less than 0.05 was considered as statistically significant for all analyses. The STATA for windows version 10.0 (Stata Corp. College Station, TX, USA) was used for the data analysis.

RESULTS

Our analysis of the NSS data resulted in a sample of 2203 respondents who had received ambulatory care for tuberculosis and 4568 respondents who had received treatment as inpatients.

Table 1 shows the distribution of sociodemographic characteristics in the study sample. Most of the individuals were from the adult age group (15–44 years); however, the sample also had sizeable proportion of individuals from the pediatric age group. We found that a higher percentage of males reported to have suffered from tuberculosis and the disease was more common among the rural residents. Among the survey respondents, we found that a higher proportion of them were from the lower socioeconomic groups had lower levels of education and more often belonged to the backward classes.

The proportion of individuals attending private outpatient facilities was marginally higher compared to government facilities. However, for inpatient care, a higher percentage of individuals attended public health facilities [Table 2].

In our multivariate analysis, we found that women had 1.15 times higher odds of attending private health facilities as compared to males, which was marginally significant ($P=0.09$). We also found that the likelihood of attending private facilities was higher for children in the age group less than 6 years. Individuals residing in urban areas were more likely to attend private facilities as compared to their rural counterparts; however, it was not found to be statistically significant (OR=1.09; $P=0.74$). We also found that while Sikhs and Muslims had higher odds of attending private health facilities though not statistically significant; Christians had a significantly lower odds (OR=0.21; $P=0.01$).

Compared to individuals belonging to scheduled tribes (Indian communities that are accorded special status

Table 1: Distribution of socio-demographic characteristics of the study population

Variables	Outpatient care, n=2203 (% and 95% CI)	Inpatient care, n=4568 (% and 95% CI)
Age in years		
<6	14.8 (14.2, 15.4)	14.9 (13.6, 16.2)
6–14	21.6 (18.03, 25.7)	19.3 (18.2, 20.5)
15–24	17.1 (15.1, 19.3)	19.9 (18.1, 2)
25–34	13.8 (12.4, 15.3)	13.9 (12.3, 15.6)
35–44	11.66 (11.1, 12.2)	10.4 (9.1, 11.8)
45–59	12.0 (11, 13)	14.2 (13.5, 15)
60 years and above	9.0 (7.4, 10.9)	7.3 (6.5, 8.2)
Sex		
Male	51.3 (49.6, 52.9)	52.7 (51.5, 53.8)
Female	48.7 (47.1, 50.3)	47.3 (46.2, 48.5)
Place of residence		
Urban	17.8 (9.1, 32.0)	19.3 (11.4, 30.6)
Rural	82.2 (68, 90.9)	80.7 (69.3, 88.6)
Religion		
Hindu	84.6 (74.9, 91)	81.5 (75.1, 86.6)
Muslim	13.0 (5.8, 26.6)	15.1 (9.5, 22.9)
Christian	0.9 (0.6, 1.6)	0.9 (0.5, 1.8)
Sikh	1.1 (0.2, 7.5)	1.8 (0.9, 3.3)
Others	0.3 (0.1, 0.8)	0.7 (0.6, 0.9)
Caste		
Schedule tribe	10.9 (5.9, 19.3)	10.4 (6.63, 15.9)
Schedule caste	24.3 (16.5, 34.2)	28.8 (23.9, 34.1)
Other backward class	41.6 (29.2, 55.1)	40.6 (37.5, 43.7)
Others	23.2 (21.2, 25.4)	20.3 (11.3, 33.6)
Education status		
Not literate	53.8 (48.2, 59.2)	51.1 (44.2, 57.9)
Literate: without formal schooling	0.9 (0.6, 1.3)	0.9 (0.8, 1)
Below primary	14.6 (14.2, 15.1)	13.9 (12.7, 15.2)
Primary	13.6 (12.6, 14.7)	12.3 (8.8, 16.8)
Middle	11.5 (8.9, 14.7)	13.9 (12.8, 15)
Secondary and above	5.6 (4.4, 7.3)	7.93 (6.4, 9.8)
Quintiles of MPCE*		
1	31.7 (27.7, 35.9)	29.1 (26.4, 31.8)
2	23.4 (18.5, 29)	20.6 (17.5, 24.2)
3	21.3 (14.5, 30.3)	21.5 (15.7, 28.7)
4	16.3 (15.1, 17.6)	17.5 (10.2, 28.5)
5	7.3 (4.8, 10.8)	11.3 (8.6, 14.6)

*Monthly per capita expenditure

Table 2: Type of health facilities visited

Type of care	Public (% and 95%CI)	Private (% and 95%CI)
Outpatient	46.8 (34.4, 59.7)	53.2 (40.3, 65.6)
Inpatient	56.4 (51.2, 61.5)	43.6 (38.5, 48.7)

by the Constitution of India), individuals belonging to others castes are more likely to attend private health facilities. We found that individuals with higher education level (OR=1.60; P=0.13) and those belonging to the higher economic class had higher odds of attending the private sector (OR=1.53; P=0.28), but both the associations were not found to be statistically significant [Table 3].

We analyzed the subgroup of individuals not attending government health facilities to identify to the possible reasons. We found that the most common reason for not availing government facilities for the treatment of tuberculosis was their dissatisfaction with the services (51.7%). About 18% of the individuals cited nonavailability of government facilities in the neighborhood as a reason for attending private services. Long waiting time and financial constraints were the main factors that discouraged patients from seeking health care at government facilities [Table 4].

We further subclassified this group into rural and urban to identify the reasons. Most of the rural respondents cited the lack of satisfaction with services at the government facilities as the most common reason followed by nonavailability of these facilities in the vicinity. A considerably high percentage of individuals (5.4%) cited financial reasons as a reason for not attending government facilities in the rural areas. Among the urban dwellers, dissatisfaction with services and long waiting periods were the most common reason for not attending government centers [Table 5].

DISCUSSION

One of the critical components of the STOP TB strategy is the engagement of all care providers to ensure access to high-quality diagnosis and patient centric care.^[1] This is especially important for countries like India where a large, segmented, and unregulated private health care sector caters to the health needs of 75% of the population.^[9]

In this study, we examined the health care seeking behavior of a nationally representative sample of individuals with self-reported history of tuberculosis. The main objective of the current analysis was to identify the factors that influence the choice of ambulatory or inpatient care for patients with tuberculosis in India and identify the reasons for the same.

In our analysis, we found that the sociodemographic characteristics of the respondents were similar in both the groups, i.e., outpatients and inpatients. We found that the disease was more commonly reported in the adult age group, i.e., 15–44 years, with a higher male preponderance. The disease was more commonly reported by the rural residents and majority of these individuals belonged to the lower socioeconomic group. These findings are similar to those reported in previous studies.^[4,5]

We analyzed the relationships between sociodemographic variables and the likelihood of turning to a private provider for TB-related curative services. In our sample, we found

Table 3: Logistic regression results: Factors that influence the use of private health facilities

Characteristics	Unadjusted odds ratio	95% CI	P value	Adjusted* odds ratio	95% CI	P value
Sex						
Male ^a						
Female	1.08	0.97, 1.20	0.12	1.15	0.98, 1.36	0.09
Age						
>6 years ^a						
6–14 years	0.90	0.61, 1.33	0.50	0.82	0.54, 1.26	0.36
15–24 years	0.91	0.74, 1.14	0.34	0.72	0.49, 1.04	0.08
25–34 years	0.85	0.56, 1.31	0.36	0.68	0.46, 1.02	0.06
35–44 years	0.97	0.78, 1.21	0.73	0.78	0.46, 1.33	0.36
45–59 years	0.88	0.65, 1.18	0.28	0.68	0.46, 1.03	0.07
60 years and above	0.92	0.78, 1.10	0.28	0.78	0.54, 1.15	0.21
Place of residence						
Rural ^a						
Urban	1.37	0.60, 3.10	0.35	1.09	0.65, 1.84	0.74
Religion						
Hindu ^a						
Muslim	1.27	0.81, 1.99	0.22	1.32	0.67, 2.63	0.42
Christian	0.22	0.08, 0.61	0.01	0.21	0.06, 0.70	0.01
Sikh	2.63	0.62, 11.03	0.14	2.14	0.34, 13.33	0.41
Others	1.11	0.27, 4.51	0.85	0.95	0.27, 3.33	0.94
Caste						
Schedule Tribes ^a						
Schedule Caste	1.52	0.37, 6.15	0.46	1.27	0.39, 4.18	0.69
Other Backward Class	1.86	0.59, 5.89	0.21	1.61	0.46, 5.63	0.45
Others	1.40	0.28, 6.92	0.59	1.09	0.33, 3.63	0.89
Education						
Not literate ^a						
Literate: without formal schooling	1.34	0.51, 3.53	0.45	1.24	0.51, 3.04	0.63
Below primary	0.94	0.65, 1.37	0.67	0.94	0.65, 1.36	0.74
Primary	1.01	0.76, 1.33	0.95	0.99	0.66, 1.48	0.97
Middle	0.94	0.63, 1.42	0.71	0.87	0.52, 1.45	0.58
Secondary and above	1.87	1.16, 3.00	0.02	1.60	0.87, 2.93	0.13
MPCE**						
1 ^a						
2	1.07	0.28, 4.17	0.89	1.10	0.50, 2.41	0.81
3	1.36	0.92, 2.02	0.09	1.41	0.66, 3.02	0.37
4	2.98	0.83, 10.63	0.08	3.01	1.16, 7.82	0.02
5	1.51	0.13, 17.71	0.66	1.53	0.70, 3.37	0.28

*Adjusted for age (continuous variable), sex, education level, religion, monthly per capita expenditure, caste, place of residence, and employment status; **Monthly per capita expenditure; ^a Reference group.

Table 4: Reasons for not attending government facilities

Reasons	N=1676
No medical facility available in neighborhood	18.3 (13.83, 23.79)
Not satisfied with services at government sector/facility	51.7 (46.38, 56.99)
Long waiting	8.9 (4.73, 16.15)
Financial reasons	6 (3.70, 9.66)
Others	15.1 (9.54, 23.03)

that female patients were more likely to seek care from the private facilities, especially for outpatient care (OR=1.2; P=0.09). There are a number of possible explanations for why women with TB utilize private healthcare services more than men. It has been reported that women in India are more sensitive to the social stigma of TB than men and prefer not to disclose it.^[10] Besides, it is generally considered

Table 5: Reasons for not attending government facilities classified by place of residence

Reasons	Rural	Urban	P*
No medical facility available in neighborhood	17.2 (13.6, 21.5)	1.1 (0.9, 12.2)	0.15
Not satisfied with services at government sector/facility	40 (33.2, 47.3)	11.6 (8.8, 15.2)	
Long waiting	6.8 (5.7, 8.3)	2 (0.2, 16.6)	
Financial reasons	5.4 (2.9, 9.8)	0.7 (0.2, 2.3)	
Others	9.9 (7.3, 13.4)	5.2 (2.4, 10.6)	

*Chi square P value

easier to conceal the disease when seeking care in the private sector than in the public sector.^[11]

We did not find a significant urban–rural difference in care seeking behavior for tuberculosis. Individuals from

the rural areas were equally likely to seek services from private providers, especially outpatient care. Thus, the private sector plays an important role in providing curative services for tuberculosis both in the rural and urban areas in India. This finding is similar to previous reports^[4,5] and is important because it suggests that even with the expansion of the diagnostic and treatment services under national TB program, the importance of the private sector has remained unchallenged.

Our findings suggest that utilization of private facilities is associated with income and education level. We found that individuals with higher levels of education had greater propensity to seek services from the private providers than individual with lower education levels. Even within the economic classes, the higher income groups are more likely to visit private providers. However, the magnitude of this difference was marginal as even among the lower income groups a high proportion of individuals utilized the private sector for TB-associated care. This finding is similar to previous reports.^[11-13]

Various reports on health care utilization in India indicate that the private providers are an important group in delivering both ambulatory and inpatient care; especially for the former.^[9] The results of our study support the same. Our analysis shows that the use of private providers among individuals with tuberculosis does not differ substantially from the general pattern of utilization of private providers in India. Almost half of our study sample sought services from the private sector; which is similar to previous reports^[4-7] but is disappointing as it is indicative of the underutilization of the extensive network of services under the national TB program. The finding is unlikely to be affected by the private–public–mix schemes under revised national tuberculosis programme (RNTCP) as at the time of the survey only about 3000 private providers were engaged with the program.^[14]

In our analysis, we also explored the reasons for the preference for private providers among individuals not attending government facilities. We found that dissatisfaction with the services in the government sector was the dominant reason, which is similar to previous studies.^[14] This finding draws attention to the need to improve public facilities not only by ensuring adequate supplies, resources, and infrastructure, but also by introducing measures to improve the quality of care. A reasonably high proportion of respondents in our study reported financial reasons as a ground for not attending government facilities. This is a concern as treatment for tuberculosis is freely available under the national

programme. The observation is similar to past studies^[15] and could be due to the expenditure associated with transportation, accommodation, and loss of work days (especially for inpatient care).

One-fifth of the subjects also cited nonavailability of government facilities in the vicinity as a contributing factor to low use of public health facilities. This was reported primarily by those from the rural areas. This is a concern and points toward the need to improve community outreach by establishing a network of sputum collection centers and DOT providers.

There are some limitations with this study. Our data consisted of respondents with self-reported history of tuberculosis during the NSS. There were no means of confirming the diagnosis. This could have led to misreporting in some cases. Another potential source of bias is that the data for the study was collected in 2004 which was prior to the full coverage of services under RNTCP. However, by then about 75% of the population had been covered under RNTCP and the rest of the population were receiving services under the previous program.^[14] Finally, it is well recognized that TB patients shop for effective private treatment and later shift to government services. As this was a cross-sectional survey, it was not possible to track this.

CONCLUSION

In India, much of the population, across all socioeconomic strata, consult private providers at some time during their illness. These private providers outnumber public health care providers and often offer better geographical access and more personalized care than the public facilities. The involvement of the private sector has, therefore, become extremely important to improve the effectiveness and outreach of TB control efforts in India.

With a large and fast growing private health care sector in India, the above findings should compel planners of TB control to urgently consider more innovative ways to engage private providers so that they may willingly contribute toward the control efforts for TB in India.

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