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Pulmonary tuberculosis in Patna, India: Durations, delays, and health care seeking behaviour among patients identified through household surveys

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ABSTRACT

Background: Delays in accessing effective health care plays a pivotal role in increasing Tuberculosis (TB) transmission within the community. Patna, North India, with high levels of poverty and weak public health system, faces huge challenges for achieving effective TB control. The study aims to determine delays that occur from onset of TB symptoms until initiation of pulmonary TB (PTB) treatment among patients in Patna.

Methods: Of the 109 self-reporting TB patients identified through an active household survey, 64 PTB patients were interviewed. First care seeking, TB diagnostic and treatment initiation durations were calculated and delays defined for new and retreatment patients and minors and adults. Outliers exhibiting extreme delays were additionally identified.

Results: A cross sMean total pathway duration for TB care was 40 days, with diagnostic duration contributing to 58% of the duration. No significant differences were noted between new and retreatment patients. Minors, comprising of 30% of total PTB patients accessed care faster than adults, but showed significantly higher diagnostic duration (38 days vs. 17 days). Preference for private sector, chemists and allopaths was seen throughout the pathway.

Discussion: Patna requires a more effective harnessing of the private sector augmented with reliable diagnostic investigations and a focus on quality.

1. Introduction

India contributes almost 30% of the global Tuberculosis (TB) burden [1] with prevalence rate of 195 per 100,000 population nationally [2]. Despite efforts to achieve 70% case detection, the Revised National TB Control Programme (RNTCP) is unable to control the epidemic. Approximately 2.8 million TB patients, of the estimated annual global incident TB patients of 10.4 million in 2015 are reportedly from India [1]. Hence for effective control of TB, early care-seeking, accurate diagnosis and prompt initiation of treatment are paramount [3,4].

Recognizing the need to shorten patient pathways to TB care, a Private Provider Interface Agency (PPIA) strategy was planned to be introduced [5] before which, baseline evaluation studies were undertaken in 2014 in Mumbai and Patna. The baseline study conducted in the urban slums of Mumbai showed that patients experienced delays beyond two months from the onset of symptoms to first care seeking, diagnosis and treatment initiation [6]. It further demonstrated that Mumbai, with a well established public health sector and more than 60% population living in slums [7], saw TB patients switching between the private and public sectors in all three stages of care [6]. In this paper we present the findings from the baseline study conducted in Patna.

Patna with a population of 2.04 million [8], presents a different landscape from Mumbai. Burdened with an estimated notification rate of 77 per 100,000 population [9], the city is perceived to have a weak public health system with the overt presence of an unregulated private sector for TB care (World Health Partners, personal communication). Thus Patna presented an opportunity to understand the influence of the private sector in shaping the access to care pathways of TB patients.

Previous studies in India on patient pathways [10–12] have bypassed locations such as Patna. Additionally, most previous studies [13–15] have been facility-based in contrast to the present study, which was undertaken through active community participation and captured information on pathways of self-reported pulmonary TB patients.

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2. Method

2.1. Study design and sampling

The Municipal wards in Patna city with the highest reported proportion of TB patients were identified through digital mapping. A community-based active survey was carried out in households (HH) of the three municipal corporations between May and August 2014 to identify self-reporting pulmonary TB patients. Subsequently in-depth interviews were conducted between May and September 2014. Three attempts were made to contact all those identified through the HH survey either via telephone and/or house visit to secure an interview. Patients of all ages and genders, diagnosed with pulmonary TB, or receiving anti-TB treatment (ATT) in the six month period prior to the interview, were included for in-depth interviews. Extra-pulmonary TB patients, patients diagnosed or completed ATT more than six months prior to the interview, patients not consenting for interview, and those too ill to speak, hospitalized or without a guardian, were excluded from the study. All interviews conducted by trained, local field researchers with social sciences background were supervised by qualified and experienced Public Health researchers. These were conducted within a week of their identification by the HH survey. The key domains of the interview schedule included patient's general information, socio-demographic profile, health seeking behaviour and the pathway to TB diagnosis and care, with detailed enquiry about every provider accessed.

Among 109 TB patients identified through the initial HH survey, 64 were included in the final sample for in-depth interviews. Reasons for not including the remaining 45 patients were: a) extra-pulmonary TB patients – 13, b) TB history beyond the stipulated recall period of 6 months – 14, c) unavailability – 9, d) refusals for interview – 9.

2.2. Data collection and quality check

The in-depth interview schedule, information sheet and informed consent forms were developed in English, translated into Hindi (local language) and then back translated to check for consistency. All interviews were conducted in Hindi or the preferred local dialect, by two researchers, viz. the main interviewer and note taker. Interviewed patients were compensated monetarily (USD 4.5) for their participation at the end of the interview. On an average, these interviews lasted for sixty to ninety minutes. Interviews were audio recorded after consent from the respondent. Confidentiality on names and addresses was maintained throughout reporting.

In interest of a stringent quality check, interviews were reviewed using audio files, supporting documents and quantitative sheets at three levels:

1) Peer review of interviews by a second team of researchers;
2) Review of 25% of interviews by two senior researchers;
3) Review of 10% of interviews by a study consultant.

2.3. Data management and analysis

Quantitative data were filled on code sheets by field researchers at the end of the interviews. These were cross checked for errors and the codes entered in CSPro v5. The data were then exported into SPSS v19 (SPSS, Chicago Inc, IL, USA) and analyzed.

Patients were analyzed based on a) age (minors vs. adults) wherein minors were defined as patients below 18 years b) past TB treatment (new vs. retreatment) to assess their modulation of pathways.

Since outliers constituted more than 10% of the patients for each segment of the pathway, differences were compared using *t*-test as opposed to a non parametric test.

2.4. Operational definitions

Total patient pathway duration was defined as the time interval between onset of symptoms suggestive of TB and the initiation of ATT. Duration beyond 35 days was considered as **"total patient pathway delay"**.

First care seeking duration was defined as the time interval between the onset of symptoms suggestive of TB and the first contact with any health care provider for the same. Duration beyond 15 days was considered as "**first care seeking delay**" as per STCI guidelines [16].

Diagnostic duration was defined as the time interval between first care seeking and receiving PTB diagnosis for the first time. Duration beyond 15 days was considered as **"diagnostic delay"** as per RNTCP guidelines [17].

Treatment initiation duration was defined as the time interval between the diagnosis of PTB and the initiation of TB treatment. Duration beyond 7 days was considered as **"treatment initiation delay"** as per RNTCP guidelines [17].

Outliers were patients with extreme delays computed on the median value of the delay segment of the pathway duration (in days). Thus outliers for first care seeking delay were those who had delays of 26 days or more, those for diagnostic delay had delays of 40 days or more and those for treatment initiation delay had delays of 15 days or more.

2.5. Ethical consideration

The study was approved by the Institutional Ethics Committee of the Foundation for Medical Research, Mumbai, India (FMR/IEC/TB/01/2013).

3. Results

3.1. Profile of patients

As depicted in Table 1, among the 64 PTB patients interviewed, 30% (n = 19) were minors. Proportion of gender among minors (males – 42% and females – 58%) and adults (males – 52% and females – 48%) were not significantly different. Fifty-six percent patients (n = 36) were not contributing to the family income at interview and 34% patients (n = 22) were illiterate. Twenty-three percent patients (n = 15) admitted to a past history of TB, while 33% patients (n = 21) reported having some form of addiction. Nine TB patients (14%) reported co-morbidities: diabetes, hypertension and fibroids.

3.2. Initial symptoms as reported by patients

Cough was the most frequently reported initial symptom, followed by other cardinal symptoms such as fever and hemoptysis as seen in Fig. 1. Other symptoms included non-TB related symptoms such as leg and abdominal pain, diarrhea etc.

3.3. First point of care

The first point of care after the onset of symptoms was predominantly the private sector. Ninety-four percent (n = 60/64) patients first sought care in the private sector. Among these 60 patients, 55% (n = 33) first sought care from allopaths, followed by chemists (n = 16; 27%) while 5% (n = 3) approached non-allopaths and one patient approached a compounder. Seven patients (12%) were unaware of the qualifications of their providers. Government hospitals were the first point of care for all four patients who approached the public sector.