

Treatment outcomes of tuberculosis patients detected by active case finding under the Revised National Tuberculosis Control Programme during 2018 in Haridwar district of Uttarakhand

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ABSTRACT

Background: In India, the active case-finding (ACF) strategy began in 2017 under the Revised National Tuberculosis Control Programme to find its missing tuberculosis (TB) cases. Few studies have been conducted in India to assess the treatment outcome of TB patients detected by ACF. **Aim:** The aim of this study was to assess the treatment outcomes of patients detected through ACF campaigns during the year 2018 in Haridwar district, Uttarakhand. **Study Design:** This was a cross-sectional study which used the existing data and records. **Materials and Methods:** The ACF campaign records of 2018 were extracted from six TB units of Haridwar district. Details of sociodemographic, clinical profile, and treatment outcome of 100 diagnosed patients were obtained and analyzed. **Results:** Out of the total 100 TB patients detected, the site of disease was pulmonary in 98% of patients. Almost all (92%) the patients were diagnosed microbiologically and treatment was initiated by 78% of the patients. The proportion of successful treatment outcome was found in 64% of the patients. The median time interval from diagnosis to treatment was found to be 2 days. **Conclusion:** In spite of these efforts of ACF, a high proportion of initial loss to follow-up (22%) and unsuccessful treatment outcome (18%) among ACF patients is a major concern. Findings of ACF campaign pose a concern for active follow-up after diagnosis and close monitoring during treatment.

Keywords: Active case finding, outcome, patient, pulmonary, tuberculosis

Introduction

India reported about one-fourth of the global tuberculosis (TB) burden with an estimated TB incidence of 27 lakh in 2018.^[1] To combat with this high incidence of TB in India, a target of “TB-free India by year 2025,” was set 5 years prior to

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the Sustainable Development Goal targets by 2030.^[2] New strategies and innovations such as reaching out to the unreached, diagnosing at the doorstep, and engaging private service providers including free diagnostic with treatment services to patients have been adopted in the National Strategic Plan (NSP) 2017–2025.^[2] Currently, the incidence of TB is reducing by about 1%–2% per annum. Similarly, to attain the ambitious target set by NSP goal by 2025, efforts should be done to achieve reduction in TB incidence at a rate of 10% per annum.^[2]

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Undetected patients of TB pose a major challenge to community health safety, specifically among high-risk groups. These groups were recognized and reported in India's NSP (2017–2025). A structured and stage-wise screening for these groups to detect undiagnosed TB patients must be followed, which, in turn, can help in diagnosing patients at an early stage. This will further help in decreasing TB transmission in the community and desired treatment outcomes can be achieved. This active case detection can also help patients in combating the socioeconomic perspective of TB.

Active case finding (ACF) is defined as “the systematic identification and screening of people with presumptive TB, in high risk groups, using tests, examinations or other procedures that can be applied rapidly.”^[3] In India, this ACF campaign for TB started in 2017 under the Revised National TB Control Programme (RNTCP).^[4] A large number of population comprising about 18.93 crore individuals were screened in 2018, which resulted in an extra 47,307 TB patients.^[1] Under this program, every state of country was given a mobile TB van for diagnosing active TB cases and various areas were covered which were difficult to reach. Primary care physicians along with a team of auxiliaries including accredited social health activist and Anganwadi workers are in a position to screen and detect such patients who are at high risk for developing the disease and unlikely to use health-care services. The primary care physician often being the first contact for a patient will be able to guide and thus ensure that the patient gets tested for TB and subsequent management on a TB case as per programmatic guidelines.

In Uttarakhand state, Haridwar district was selected for ACF campaign. In 2018, two ACF campaigns were conducted in Haridwar. A very few studies in India assessed the treatment outcome of TB patients detected by ACF campaign.^[5,6] This study will be helpful to understand the sociodemographic profile, clinical characteristics, and treatment outcome of diagnosed patients under ACF.

Materials and Methods

Study design

The present study was a cross-sectional study, and data was extracted from the existing records of the TB program.

Study setting

Uttarakhand is situated in the northern part of India, which is comprised of 13 districts. Apart from the state capital Dehradun, Haridwar is the next most populated district in the state with nearly 1.9 million persons. Haridwar holds a huge migratory population because of its religious significance. Majority of the TB cases in Uttarakhand state were detected in Haridwar district.^[7] Due to a large detection of TB cases and migrant population, the ACF campaign was initiated in Haridwar. Till now, three ACF campaigns (1 in 2017 and 2 in 2018) have been executed in Haridwar district under the RNTCP. In 2018, the ACF campaign was conducted in February

and December. The present study included all TB patients detected during these two ACF campaigns. The ACF campaigns were executed as per the RNTCP Technical and Operational Guidelines 2016.^[4] Following the diagnosis of TB, patients were started on a 6/8-month RNTCP treatment regimen.

Study participants

The study participants comprised all 100 TB patients who were detected during the two ACF campaigns under the RNTCP in 2018 in Haridwar district.

Data characteristics

The variables studied were as follows: age, sex, clinical profile (category of disease, type of diagnosis, site of disease, type of drug regimen, and initiation of treatment), date of diagnosis, date of treatment initiation, and their treatment outcomes. Data were collected from multiple sources (Nikshay portal, lab register, treatment register, and ACF register) and entered into a structured data collection pro forma.

Data analysis

Data entry was done by EpiData version 3.1 (EpiData Association, Odense, Denmark) and validated after double entry. Data were analyzed using IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp. Patient characteristics were summarized by descriptive statistics (frequencies and proportions). The sociodemographic and clinical profile of the patients was tabulated. The primary outcome of interest was treatment outcome as “unsuccessful or successful.” “Died,” “loss to follow-up (LTFU),” “failed,” and “not evaluated” were categorized as unsuccessful treatment outcomes. “Treatment completed” and “cured” were included as successful treatment outcomes.

The Institutional Ethics Committee of AIIMS, Rishikesh, India, gave approval vide no. AIIMS/RIS/IEC/18/200. Administrative approval was taken from the District and State TB officer for conducting the study.

Results

Profile of tuberculosis patients detected by active case finding

A total of 100 TB cases were diagnosed by ACF campaigns in 2018 in Haridwar district, including 92 (92%) with “smear-positive pulmonary TB,” 6 (6%) “smear-negative pulmonary TB,” and 2 (2%) were diagnosed as “extra-pulmonary TB” cases. The sociodemographic profile and clinical characteristic of the patients detected by ACF is presented in Table 1. Two-third (67%) of the patients were males. Majority of the patients (91%) were new patients. All the 100 confirmed TB patients were advised to start treatment at the nearest government health centers. The initial LTFU was reported by 22 patients. The median number of days from diagnosis to treatment initiation was reported as 2 days.

Table 1: Sociodemographic and clinical profiles of tuberculosis patients detected by active case finding under the Revised National Tuberculosis Control Programme in Haridwar district during 2018

Characteristics	n (%)
Sex	
Male	67 (67)
Female	33 (33)
Age group (years)	
0-14	2 (2)
15-44	46 (46)
45 and above	48 (48)
Missing	4 (4)
Type of patient	
New TB patient	91 (91)
Previously treated	9 (9)
Type of disease	
Smear-positive PTB	92 (92)
Smear-negative PTB	6 (6)
EPTB	2 (2)
Type of diagnosis	
Microbiologically confirmed	92 (92)
Clinically confirmed	8 (8)
Sputum result and grading	
Negative	6 (6)
1+	49 (50)
2+	6 (6)
3+	10 (11)
Positive, not quantified	19 (19)
Scanty, not quantified	1 (1)
Scanty, but quantified	7 (7)
Initiation of treatment***	
Yes	78 (78)
No	22 (22)

***Only for those who were started on treatment. TB=Tuberculosis, PTB=Pulmonary TB, EPTB=Extra-PTB

Treatment outcome of tuberculosis patients detected by active case finding

Of those initiated on treatment, the proportion of successful treatment outcome was 64%. Of those with an unsuccessful outcome, majority of them were lost to follow-up ($n = 07$, 50%) or death ($n = 04$, 28%) [Table 2].

Comparison in treatment outcome in relation with the time of diagnosis to treatment

Time interval from diagnosis to treatment in TB patients with a successful outcome was significantly less than those with an unsuccessful outcome [Table 3]. The mean duration of time interval from diagnosis to treatment in TB patients with a successful outcome was 3.5 ± 5.17 days, whereas the mean duration of time interval from diagnosis to treatment in TB patients with an unsuccessful outcome was 9.30 ± 12.33 days.

Discussion

There were three key findings in this study: (1) there is high initial LTFU among patients detected through ACF, (2) high

Table 2: Tuberculosis treatment outcomes of patients diagnosed by active case finding under the Revised National Tuberculosis Control Programme in Haridwar district during 2018

Outcome	n (%)
Successful outcome	64 (82)
Cured	27 (35)
Completed	37 (47)
Unsuccessful treatment outcome	14 (18)
Died	4 (5)
Failed	0 (0)
LTFU	7 (9)
Not evaluated	2 (3)
Change in treatment regimen	1 (1)
Transferred out	0 (0)
Total	78 (100)

LTFU=Loss to follow-up

unsuccessful treatment outcome in TB patients detected by ACF, and (3) TB patients who have higher time interval from diagnosis to treatment had significantly worse treatment outcomes compared to those who have lesser time interval from diagnosis to treatment.

In our study, the initial LTFU among TB patients detected by ACF was very high (22%). Although the available evidence is limited with varying definitions used in different studies, the initial LTFU rates among ACF patients documented in other nations ranged from 26% to 32%, which support the findings in this study.^[6,8] In addition, testing for sputum examination and other investigation is perceived as a difficult task by the programmatic staff.^[9] Evidences from literature suggest that multiple factors play a key role in prediagnostic LTFU. These factors range from issues related to logistics, family, health system, and health providers and patients' issues.^[10] Willingness to initiate treatment may be attributed to the de-motivated patient due to mild symptomatology and no felt need for receiving care.^[6]

Approximately one-fifth of the patients (14 patients) detected by ACF had an unsuccessful treatment outcome. This may be a routine process as patients detected by ACF are relatively healthier, so they are more to be expected to drop out or be noncompliant. Another reason for this finding can be that ACF is a contributor-driven activity with no active role of the patient in the process of diagnosis and treatment initiation.

In the present study, 92% of the cases were found to be confirmed by sputum smear, which is in contrast with the results found in a study where only 18.1% were confirmed by sputum smear examination.^[11] This may be due to the reason that ACF campaigns have always been on picking up smear-positive TB cases from the community in order to stop disease transmission. Other rationale could be that chest X-rays were not conducted during one ACF campaign, so clinically diagnosed smear-negative cases were missed.

Table 3: Comparison of treatment outcome in relation to time interval from diagnosis to treatment in tuberculosis patients detected by active case finding under the Revised National Tuberculosis Control Programme in Haridwar district during 2018

Treatment outcome*	n	Mean rank	Sum of ranks	P (Mann-Whitney)
Treatment successful	64	36.67	2347.00	0.04**
Treatment unsuccessful	13	50.46	656.00	

*Outcome was not available for one patient, P value represents a statistically significant difference of time interval from diagnosis to treatment in TB patients with successful outcome and unsuccessful outcome which are marked by a **mark. TB=Tuberculosis

Limitations

Data on other comorbidities such as diabetes status, alcohol consumption, HIV status, and weight, which may be key confounders and are usually collected within the program, were not obtained for a significant number of people with TB. Since this is a record-based study, the various reasons for LTFU and perception of health-care providers and patients on ACF were not included.

Conclusion

In brief, the results of the present study indicate that ACF campaign for TB has remarkable effect on the diagnosis and treatment outcomes of TB in communities. In spite of these efforts of ACF, the high proportion of unsuccessful treatment outcome (36%) found among ACF patients is a major concern. To reduce LTFU and unsuccessful treatment outcomes, long-term follow-up of ACF campaign and continuous monitoring with active participation from community people is required. The major problem with ACF is LTFU. This issue also can be rationalized by primary care physicians by inspiring and motivating them to complete the treatment.

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Conflicts of interest

There are no conflicts of interest.

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