

**COMMUNITY-BASED ACTIVE TUBERCULOSIS CASE FINDING IN RURAL POPULATION OF AMRAVATI DISTRICT: A FEASIBLE AND EFFECTIVE STRATEGY**

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Article Received on 01/03/2020

Article Revised on 22/03/2020

Article Accepted on 12/04/2020

**ABSTRACT**

**Introduction:** In light of the limitations of the current case finding strategies and the global urgency to improve tuberculosis (TB) case-detection, a renewed interest in active case finding (ACF) has risen. The WHO calls for more evidence on innovative ways of TB screening, especially from low-income countries, to inform global guideline development. We aimed to assess the effectiveness of community-based ACF for TB among the rural population of Amravati district and determine its impact on case detection and treatment uptake. **Materials and methods:** Present study was done during 13- 28 September 2019 by public health department of Government of Maharashtra. Active case finding strategies was applied for early detection and diagnosis of high risk population in Amravati rural area. Among 15 Tuberculosis Units in Amravati district, out of 2150364 target population, 1968617 populations were screened out for tuberculosis. **Results:** Among the screened population, Number of Presumptive TB Cases Identified was 4733 (0.24%). Out of 4733 presumptive TB cases, total 203 (4.2%) patients were diagnosed as tuberculosis. And all 203 (100%) were put on Antikoch's treatment. **Conclusion:** ACF could supplement current strategies to yield additional TB cases, lead to early diagnosis and better treatment.

**KEYWORDS:** Tuberculosis, Active case finding, rural area.

**INTRODUCTION**

The current WHO End TB strategy highlights the importance of early diagnosis, including universal drug susceptibility testing (DST) and systematic screening of contacts and high-risk groups to reduce the case-detection gap (World Health Organization).<sup>[1]</sup> Active case finding (ACF) is defined as the systematic identification of people with suspected active TB, in a predetermined target group, using tests, examinations or other procedures that can be applied rapidly. Among those whose screening is positive, the diagnosis needs to be established by one or several diagnostic tests and additional clinical assessments, which together have high accuracy. This includes interventions from screening contacts of people with active TB to mass community screening of asymptomatic individuals.<sup>[2]</sup>

Active and enhanced case finding (ACF) requires a special effort by the health care system to increase the detection of TB in a given population. These strategies identify and bring into treatment people with TB who

have not sought diagnostic services on their own initiative. By detecting and treating TB in patients earlier than would occur otherwise, ACF can reduce the number of subsequent TB infections and prevent secondary cases.<sup>[3]</sup>

The current realities suggest that an active TB case-finding (ACF) strategy, especially in high prevalence areas with high burden of HIV, may be a necessary component of TB control. Compared with self-presentation, active case finding is likely to lead to an improved early diagnosis of TB, early initiation of treatment, reduced morbidity and mortality, reduced community transmission, and reduced incidence/prevalence of TB.<sup>[4]</sup>

**MATERIALS AND METHODS**

Combined leprosy, Tuberculosis and non communicable diseases patient awareness campaign was held during 13- 28 September 2019 by public health department of Government of Maharashtra.

During this campaign period, active case finding strategies was applied for early detection and diagnosis of high risk population in Amravati rural area.

Health care workers like Auxiliary Nurse Midwife (ANM), Multipurpose Worker (MPW) assisted by community health volunteers like an Accredited Social Health Activist (ASHA) had performed door-to-door visit to screen all available household members for symptoms suggestive of Tuberculosis such as cough, sputum, unintentional weight loss, fever, nocturnal sweat, etc.

Active case finding interventions of community based approaches (TB screening outreaches, community outreach/house-to-house screening, and contact tracing of members of households of TB patients) and systematic screening of target groups (pregnant women, women attending maternal and child health clinics, OPD clinics, and HIV-infected individuals) was carried out. Already diagnosed cases on treatment were not included in study. Among 15 Tuberculosis Units (TU) in Amravati district, out of 2150364 target population, 1968617 populations were screened out for tuberculosis.

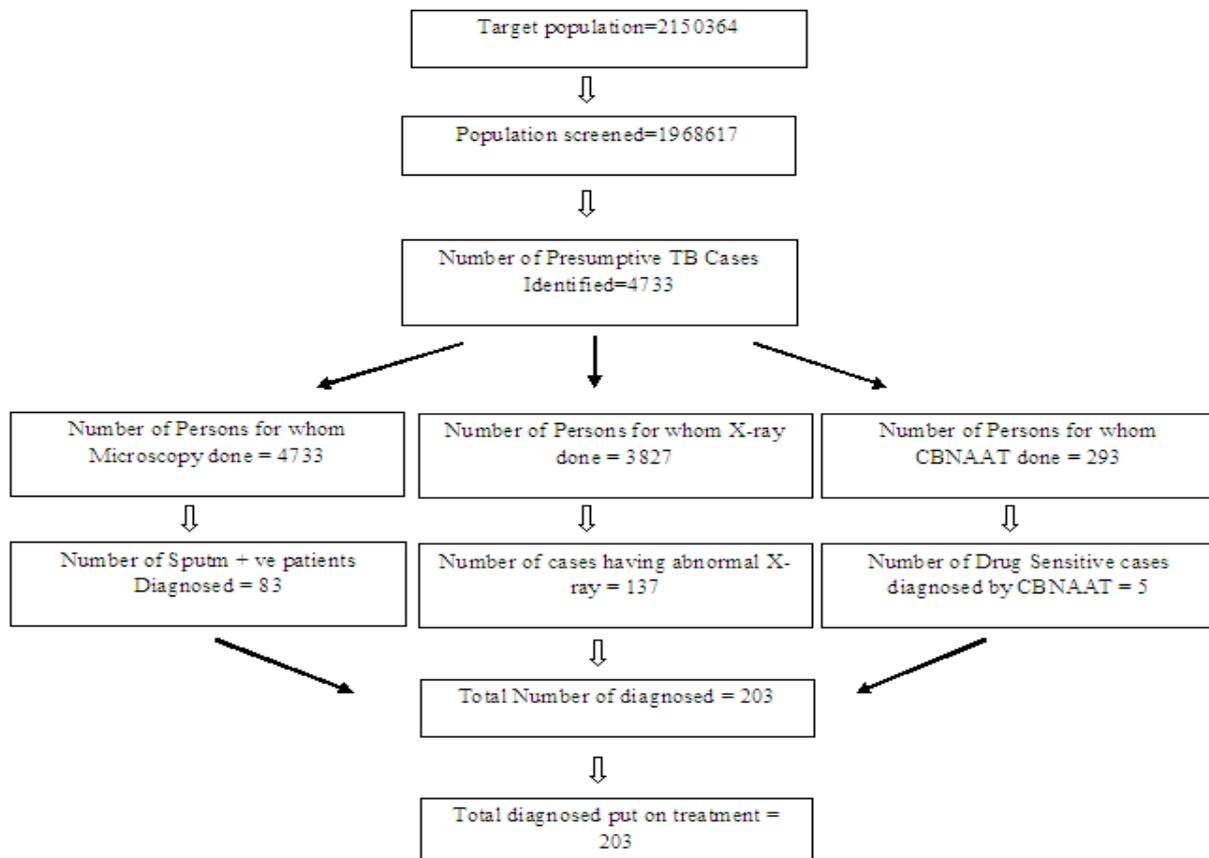
### Sputum collection

The Revised National Tuberculosis Control Programs guidelines were used to evaluate all symptomatic people. Patients were instructed on how to produce good quality sputum specimen by standard operating procedure. The first specimen was collected during the house visit. Second specimen was collected early morning on the next day. Specimens were transported daily to the TB laboratory after registered in Sputum Registry Notebook.

### Patient management and follow-up

Patient management and follow-up TB cases were defined as "a physician's diagnosis of TB in a person who has bacteriological evidence of active disease and/or signs and symptoms compatible with TB and has completed diagnostic evaluation, and a physician's decision to start treatment with a full course of anti-tuberculosis therapy." Laboratory technicians Issued positive results from smear microscopy to the respective TB workers who (ideally within 24-hour) contacted the patient directly. Smear positive TB patients were referred to the related health center for initiation of TB treatment at their earliest convenience. Written results were distributed to the TB worker at least once a week, including negative results. When smear microscopy was negative but TB symptoms persisted, individuals were further diagnostic work-up including chest radiography.

## RESULTS



**Diag. 1:** Flow chart showing Community-Based Active Tuberculosis Case finding in rural population of Amravati district.

Among 15 TUs in Amravati district, out of 2150364 target population, 1968617 (91.54%) population was screened for tuberculosis. Out of this screened population, Number of Presumptive TB Cases identified were 4733 (0.24%). Sputum microscopy was done for all 4733 (100%) presumptive TB cases. X ray chest was done in 3827 (80.85%) study subjects, while CBNAAT was done in 293 (6.19%) study subjects.

Out of 4733 study subjects in which sputum Microscopy was done, 83 (1.75%) were found to be sputum positive.

Among 3827 study subjects in which X-ray was done, 137 (3.57%) study subjects were having x ray suggestive of tuberculosis. And among 293 whose sample was sent for CBNAAT, 5 (1.70%) were diagnosed to have Rifampicin sensitive tuberculosis. And no one was found to be rifampicine resistant on CBNAAT.

Out of 4733 presumptive TB cases, total 203 (4.2%) patients were diagnosed as tuberculosis. And all 203 (100%) were put on antikoche's treatment.

## DISCUSSION

Present study is one of the among pioneer studies on the large-scale implementation of ACF of TB in Amravati district, and it has several important observations. The study confirms that ACF can be implemented efficiently by community volunteers with adequate training and a supportive supervisory structure.

Active and enhanced case finding (ACF and ECF) require a special effort by the health care system to increase the detection of TB in a given population. These strategies identify and bring into treatment people with TB who have not sought diagnostic services on their own initiative. By detecting and treating TB in patients earlier than would occur otherwise, ACF and ECF can reduce the number of subsequent TB infections and prevent secondary cases.<sup>[5]</sup>

Beginning in the early 1960s, researchers in developing countries began investigating new case finding strategies, relying more on the detection of symptomatic patients. A seminal publication from India in 1963 concluded that a strong health system infrastructure could detect most symptomatic TB cases.<sup>[6]</sup> Sixty-two villages in South India were surveyed over a 6-month period. The authors found that 70% of sputum-positive and 80% of radiologically active cases were aware of their TB symptoms, and that more than 50% of these patients had sought care for these symptoms. Another Indian study found that 95% of all cases detected were among 80% of patients who were aware of TB symptoms.<sup>[7]</sup> Thus; weaknesses in the health system were a more important problem than lack of awareness among patients.

A house-to-house symptom survey was conducted in a region of Central India with hilly forest terrain and small, isolated, sparsely populated villages consisting of tribal

and non-tribal populations.<sup>[8]</sup> Over a 1-year period, over 114 000 (94% of total population) were surveyed, of whom 1987 (1.7%) were symptomatic. There were 148 (129/100 000) sputum smear-positive patients among the symptomatic cases. The authors concluded that control practices should not be limited to the more populated regions, but should also include more difficult to reach tribal groups. Likewise, TB prevalence can vary greatly from urban to rural areas, particularly given the crowding found in urban areas that facilitate TB transmission. A house-to-house survey in the Philippines using mobile chest X ray units was equally successful in both urban and rural populations.<sup>[9]</sup>

A house-to-house symptom survey in Addis Ababa, Ethiopia, surveyed over 12000 residents in four kebeles, or urban neighbourhoods, and revealed 173 (1.4%) symptomatic cases, of whom 23 were sputum smear-positive for acid-fast bacilli (AFB).<sup>[10]</sup> Over 90% of the cases had been previously undetected, and the entire survey cost less than US\$1000.

## CONCLUSION

ACF should be considered as a potential supplementary approach to preexisting DOTS strategy of passive case detection. Active and enhanced case finding (ACF and ECF) require a special effort by the health care system to increase the detection of TB in a given population. These strategies identify and bring into treatment people with TB who have not sought diagnostic services on their own initiative. But its cost-effectiveness needs to be evaluated.

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