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ORIGINAL RESEARCH

Active Case Finding of Tuberculosis: Randomized Evaluation of Simple and Infotainment Chest Camps

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Abstract

BACKGROUND In Pakistan, many tuberculosis (TB) cases are not reported to the national surveillance system. An active case finding strategy in the form of conventional (simple) or innovative (infotainment) chest camps can contribute to diagnosing these missed cases.

OBJECTIVE To compare the yield in terms of TB patients detected at a simple chest camp (SCC) versus an infotainment chest camp (ICC) in rural areas.

METHODS A cluster randomized controlled trial with 2 parallel arms was conducted in 4 districts of Pakistan from June 2012 to May 2013. Rural neighborhoods (n = 318) were randomly allocated in a ratio of 1:3 to receive either SCC or ICC. Incidence of TB (all forms and sputum smear positive [SS+]) and number needed to screen (NNS) to diagnose 1 TB case were calculated. Cluster analysis was done according to intention to treat and risk ratio (RR), and 95% confidence intervals (CIs) were calculated.

FINDINGS A total of 3086 participants were tested at the SCC and 9029 at the ICC, of whom 38.5% were female. Mean age was 37.4 ± 15.9 years. Incidences of previously undiagnosed TB (all forms) for SCC and ICC were 23.6 (95% CI 20.04-27.4) and 22.1 (95% CI 20.3-24.1) per 100,000 population ($P = .42$), SS+ TB 22.5 (95% CI 19.3-26.1) and 21.6 (95% CI 19.8-23.6) ($P = .67$), respectively. NNS to diagnose 1 TB case were 260 (95% CI 234.3-289.6) and 258 (95% CI 233.3-287.9) for SCC and ICC, respectively ($P = .9$). RRs for all forms of TB and SS+ TB in SCC compared to ICC were 0.94 (95% CI 0.73-1.19) and 0.95 (95% CI 0.74-1.22) and *P* values were .58 and .71, respectively.

CONCLUSIONS Both types of chest camps are equally effective in active case finding of previously undiagnosed TB cases in rural areas in 2 provinces in Pakistan.

KEY WORDS active case finding, tuberculosis, chest camp, number needed to screen

INTRODUCTION

Pakistan is recognized as one of the 22 countries with the highest burden for tuberculosis (TB) worldwide, with estimated incident cases reaching to 0.37-0.65 million in 2014.[1] One of the major limitations in Pakistan is the inability to reach the "missed cases" of TB.[1] These are the patients in

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the community who are either not diagnosed or, if diagnosed, may not be reported to the National Tuberculosis Control Program (NTP) and the national surveillance system and may not receive treatment.[1] According to NTP, only 32% of all TB patients are reported to the national surveillance system at present.[2] Missed patients can potentially continue to infect others in the community if not treated correctly. The World Health Organization (WHO) recommends innovative strategies to reach out to these missed patients, thus preventing the spread of the disease.[1]

Two strategies can be used to find the missed TB cases: passive case finding (PCF) and active case finding (ACF).[3] PCF consists of self-referral of the patient with symptoms of TB to the health facility.[4] ACF comprises of set of activities to bring the diagnostic facilities to those in the community, even before the stage of self-referrals.[4] Focus has now shifted from PCF to ACF to diagnose and thus to treat TB early for its effective control and prevention. Studies in other settings demonstrated good yield of ACF.[4-6] According to a systematic review, ACF detects undiagnosed TB cases that are less severe, though its impact on treatment outcome remains uncertain.[7]

Various types of ACF approaches have been implemented in developing countries.[3] These mainly consist of house-to-house or door-to-door surveys and mobile vans with diagnostic facilities for TB case detection.[8] The concept of 'chest camps' dates back to 1970s, when they were first conducted in South Asian countries.[3] The basic idea of a camp is community involvement and social mobilization by mass awareness campaigns in places where TB is highly prevalent.[3] These campaigns consists of conventional activities like announcements in the neighborhoods, distributing pamphlets, posting posters, and raising awareness in schools for the prevention and control of TB.[3] Innovative activities like street theater performances by cured TB patients and community volunteers can be embedded in the social mobilization campaign to motivate people to come to the chest camp and spread awareness about TB. These different strategies, conventional or innovative, for social mobilization activities may affect the effectiveness of the ACF by the chest camps. The limitation or extent of these activities that will be feasible and effective in resource-limited settings remains unknown.

This study aimed to compare yield in terms of detection of TB patients (incidence rate and proportion of TB cases among participants) and number needed to screen to diagnose 1 TB case, by simple social mobilization activities comprised of conventional activities, as explained earlier, followed by a chest camp, referred to as simple chest camp (SCC), versus a set of innovative activities consisting of an infotainment package for the community involvement followed by the chest camp, referred to as the infotainment chest camp (ICC).

METHODS

Study Design. This is a cluster randomized controlled trial with 2 parallel arms (Fig. 1):

- *Simple chest camp (SCC)*: This consisted of simple advocacy campaign in the community before the camp. The campaign included announcements at public places like mosques, markets, and schools with invitations to the chest camp and hanging posters with the invitation for the community. This was followed by standard TB messages delivered at the chest camp.
- *Infotainment chest camp (ICC)*: This consisted of a package of community awareness and advocacy about symptoms, diagnosis, and treatment of TB in the form of an infotainment event (entertaining program giving information about TB) for all the members of the community (ie, for all ages and both genders) 1 day before the camp. The infotainment script (composed of short drama performances, songs, games, and quizzes) was delivered by previous TB patients cured of the disease and volunteers from the local community. TB messages were reiterated at fixed intervals of half an hour at the chest camps.

A mobile laboratory was set up at all the chest camps with all the equipment and reagents available. Social mobilizers (staff of the TB diagnosis team) identified people with symptoms of TB. Those found to have TB were asked to give their sputum sample, which was tested for acid-fast bacilli (AFB) at the mobile laboratory according to the guidelines of NTP Pakistan.

Study Setting and Duration. This study was conducted in rural areas of 4 districts in Pakistan—3 (Bahawalpur, Gujranwala, and Vehari) in the province of Punjab and 1 (Abbottabad) in Khyber Pakhtunkhwa province. It was conducted for 1 year (June 2012 to May 2013), after approval from the NTP and the provincial tuberculosis control programs (PTPs) and with consent from the local health authorities.

Study Population. The rural areas of the districts are geographically divided into Union Councils (UCs),