

Are patients with pulmonary tuberculosis who are identified through active case finding in the community different than those identified in healthcare facilities?

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Abstract

The lack of healthcare access contributes to large numbers of tuberculosis (TB) cases being missed and has led to renewed interest in outreach approaches to increase detection. It is however unclear whether outreach activities increase case detection or merely identify patients before they attend health facilities. We compared adults with cough of >2 weeks' duration recruited in health facilities (1202 participants) or in urban slums (2828 participants) in Nigeria. Participants provided demographic and clinical information and were screened using smear microscopy. The characteristics of smear-positive and smear-negative individuals were compared stratified by place of enrolment. Two hundred nine health facility participants (17.4%) and 485 community-based participants (16.9%) were smear positive for pulmonary TB. Community-based smear-positive cases were older (mean age, 36.3 vs. 31.8 years), had longer cough duration (10.3 vs. 6.8 weeks) and longer duration of weight loss (4.6 vs. 3.6 weeks) than facility-based cases; and they complained more of fever (87.4% vs. 74.6%), chest pain (89.0% vs. 67.0%) and anorexia (79.5% vs. 55.5%). Community smear-negative participants were older (mean, 39.4 vs. 34.0 years), were more likely to have symptoms and were more likely to have symptoms of longer duration than smear-negative facility-based participants. Patients with pulmonary TB identified in the community had more symptoms and longer duration of illness than facility-based patients, which appeared to be due to factors differentially affecting access to healthcare. Community-based activities targeted at urban slum populations may identify a different TB case population than that accessing stationary services.

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Introduction

Health services are often inaccessible to ill individuals in the community, and this is particularly pertinent to tuberculosis (TB) in low- and middle-income countries. Despite the scaling up of TB services, it is widely acknowledged there is still a large

burden of undiagnosed TB [1], and worldwide, an estimated one third of the 9.5 million cases occurring each year are missed by public health services [2]. An important proportion of these cases are missed because individuals with symptomatic TB fail to seek medical advice for various reasons. The nonspecific presentation of TB, an expectation that symptoms will improve spontaneously and factors such as widespread stigma and misunderstanding about TB can delay or prevent individuals from seeking health services [3,4]. A further significant barrier to diagnosis is the high transport costs that may arise from multiple visits required for diagnosis [3,4]. Missed or delayed TB diagnoses may lead to poorer individual outcomes

and prolonged transmission, and it limits the impact of TB control measures [5].

Recent years have witnessed renewed interest in the 1978 Alma Ata "Health for All" declaration and the World Health Organization's (WHO) call for universal health coverage. There is thus a need to implement and assess accessible health service delivery to the community, with several models being used to improve access to services and enhance the detection of TB [1,5,6]. With effective community services, TB cases could be identified at an earlier stage of disease [5] and larger numbers of patients may be diagnosed, especially from populations underrepresented in stationary health services, such as women, the elderly and the socioeconomically disadvantaged [6]. An increase in detection is likely to be greatest when high-prevalence populations are targeted, and the WHO thus recommends systematic screening of high-risk groups with poor access to healthcare, such as those living in urban slums [5].

There is, however, debate as to whether active community-based interventions increase the number of TB cases detected or whether these cases occurred in patients that would have attended health services eventually but are instead identified at an earlier and less symptomatic stage [5]. The latter assumes that the population detected by community screening is largely the same as that which seeks care at health facilities. Conversely, if TB cases identified by community screening are from a population that would have otherwise remained undiagnosed [1] or that had an intrinsic delay in presentation as a result of differences in healthcare access or health-seeking behaviours [7], then active community screening is likely to have a greater impact on individual prognosis, transmission and total case detection. There are, however, limited data describing whether the profile of TB patients identified in the community differs compared to those identified at health facilities.

We compared the profile of two large groups in the Federal Capital Territory (FCT) of Abuja, Nigeria, who were screened for pulmonary TB (PTB) at health facilities and in the community respectively. On the basis of local anecdote, we hypothesized that community-based PTB patients would have a more prolonged duration of illness and a higher degree of symptomatology.

Methods

This study took place in the FCT of Nigeria and comprised two substudies screening adults (≥ 18 years old) for PTB on the basis of cough of more than 2 weeks' duration or other common symptoms associated with TB (night sweats, unexplained

fever weight loss or haemoptysis). The studies were conducted between 2010 and 2014. The first study was a multicentre study to evaluate a (then) new scheme called same-day smear microscopy [8]. The FCT arm of this study was conducted in the ambulatory clinics of the FCT Tuberculosis and Leprosy Control Programme (TBLCP) based at five district hospitals within Abuja Metropolitan Area Council (AMAC). Patients with symptoms of TB attend spontaneously or are referred to these TB clinics from other health centres or outpatient services and are routinely screened using smear microscopy. In the same-day scheme, we collected two sputum samples 1 hour apart on the day of first consultation. All adults attending the participating clinics with cough of more than 2 weeks' duration were interviewed by trained nurses and were asked to provide sputum specimens for examination.

The second group consisted of community-based participants from a prospective study exploring whether visiting households of slum settlements surrounding the FCT AMAC to identify adults with symptoms of PTB would increase TB case detection. All slums of the remaining five FCT local government area councils (Abaji, Bwari, Kuje, Kwali and Gwagwalada) were listed and were visited in turn over a period of 18 months. Traditional local leaders were visited to obtain permission to visit the area. Five teams, each consisting of five community health extension workers (CHEWs), one coordinator and a driver, mapped all the houses partnering with local polio programmes and visited the slums. CHEWs then went from house to house to inquire whether there were any residents with cough of more than 2 weeks' duration and continued canvassing the settlement until all households were visited. Once one or more symptomatic persons in a household was identified, the CHEWs collected demographic and clinical information and obtained two sputum samples 1 hour apart.

Sputum samples in both surveys were transported by study drivers to Zankli TB Research Laboratory the same day as collection. This research laboratory is based at Zankli Medical Centre and is a reference laboratory for the National TBLCP. Smears were examined using light-emitting diode fluorescence microscopy and were graded according to WHO criteria [9]. Demographic and clinical data were collected using a similar structured questionnaire in both surveys. For the purposes of analysis, the two smears collected on the spot 1 hour apart were used for analysis to maintain the comparability of the surveys.

Individuals with positive sputum smears, defined as having at least one acid-fast bacilli in at least one smear, were considered to have PTB. All participants identified with PTB by the surveys were linked to the nearest treatment centre to initiate appropriate therapy. The individuals with negative smears were considered to be largely free from TB for the purpose of

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