

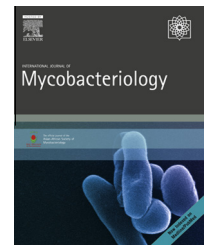


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Magnitude and treatment outcomes of pulmonary tuberculosis patients in a poor urban slum of Abia State, Nigeria

Chidubem L. Ogbudebe^{a,*}, Sam Izuogu^b, Charity E. Abu^c

^a German Leprosy and TB Relief Association, Enugu State, Nigeria

^b National Tuberculosis and Leprosy Control Programme, Ministry of Health, Abia State, Nigeria

^c Family Health International (FHI360), Anambra State Office, Anambra, Nigeria

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ABSTRACT

Objective/Background: Tuberculosis (TB) remains one of the deadliest infectious diseases worldwide, with a disproportionate number of those affected living in slum areas. We assessed the magnitude of pulmonary cases among tuberculosis patients in an urban slum in southeast Nigeria, their demographic and clinical characteristics and any associations with treatment outcomes.

Methods: A retrospective cohort study of patients registered under the National TB Programme (NTP) from 1 January to 31 December 2012 was carried out. Data were extracted from TB treatment cards and registers.

Results: Of 647 new TB patients registered, 555 (85.8%) were pulmonary TB (PTB) with a mean age of 34.5 years, and a male/female ratio of 1.3. Among these, 468 (84.3%) were smear-positive, while 87 (15.7%) were smear-negative cases. Twenty-one (3.8%) were children younger than 15 years old. TB/HIV co-infection rate was 16.9%; 57.4% received antiretroviral therapy (ART) and 88.3% received cotrimoxazole preventive therapy (CPT). Female patients were significantly younger compared to male patients ($p = 0.003$), had higher proportions of smear-negative TB ($p = 0.001$) and HIV-positive status ($p \leq 0.001$). Treatment success rate was 88.5% among smear-positive patients and 79.3% among smear-negative patients. More patients with smear-negative TB were lost to follow up compared with smear-positive TB patients ($p < 0.02$). HIV co-infection was associated with unfavourable treatment outcomes (OR 0.2, CI 0.1–0.4, $p \leq 0.001$). Among them, those who received ART had better outcomes.

Conclusions: The study revealed high proportion of PTB, mostly smear-positive TB with HIV-associated outcomes and underlines the need to ensure early TB diagnosis and improved access to HIV care for HIV co-infected patients in this setting.

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* Corresponding author at: 35 Hill View, Independence Layout, Enugu, Nigeria.

E-mail address: cogbudebe@yahoo.com (C.L. Ogbudebe).

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Introduction

Nigeria remains one of the countries with the highest tuberculosis (TB) burden in the world. According to the 2014 Global TB Control Report, the burden of TB is estimated at 338 per 100,000 population in the form of incidence and 322 per 100,000 population in the form of prevalence [1]. The National TB Programme (NTP) was established in 1991 and adopted the World Health Organization (WHO) recommended DOTS strategy in 1993. TB case-detection rate, which continues to show a rising trend, stagnated at 51% in 2012. The 2012 national survey of TB prevalence showed that only one out of every five active TB cases in the communities was notified by the NTP [2].

In many countries, disparities in TB incidence within populations have been described [3]. In urban areas, TB occurs mainly among risk groups, such as slum populations who are predisposed to poor living and environmental conditions [3–5]. However, TB patients in urban slums are rarely evaluated by NTPs in sub-Saharan Africa despite the pervasiveness of urban slums in recent years [6]. The accurate measure of the burden of TB in urban slums is difficult to obtain, mainly due to under-reporting and/or non-inclusion of sub-population data in national routine surveillance systems. In 2012, 5.7 million newly diagnosed cases of TB were notified by NTPs worldwide; 360,000 of whom were HIV positive [1]. Approximately 37% were estimated to occur among slum populations. In countries with high TB burden, slum populations account for 45–50% of all TB cases [7,8]. This proportion is, however, less in countries with a low TB burden.

In Nigeria, information on the burden of TB in slum populations is limited, especially in relation to epidemiological characteristics and their associations with treatment outcomes. Such information, however, would be valuable in contributing to robust measurement and understanding of the national burden of TB disease. The Nigerian national routine surveillance system commonly captures information on TB registration for all patient categories within the general population, however, such information is not available at sub-population levels including high-risk groups, such as slum populations. This study aims to assess the magnitude of pulmonary cases among tuberculosis patients in an urban slum in southeast Nigeria, their demographic and clinical characteristics and any associations with treatment outcomes.

Materials and methods

Study design

This was a retrospective cohort study involving a review of TB treatment cards and registers maintained under the NTP surveillance system in Aba, Abia State, Nigeria, from January 1, 2012 to December 31, 2012.

Study setting—description

The study was conducted at a low-income densely populated urban slum (Aba) located in Abia State. Aba has a projected

population of 619,583 [9] and is regarded as the most densely populated urban slum in Nigeria [10] with a population density estimated at 49.78 persons/hectare. It is comprised mostly of a heterogeneous group of people, dump-sites and displaced populations, majority of who are living in unstructured temporary settlements. TB services (diagnosis and treatment) are integrated within the public health system and are managed by the state ministry of health under the NTP. There are five public health centres in Aba. The state ministry of health also collaborates with six private health facilities located within the slum for the provision of TB services in the context of public–private partnership. All public and private health facilities providing TB services in Aba participated in the study.

Diagnosis and management of TB

Diagnosis and management of TB was based on the NTP guidelines [11]. A person coughing for 2 weeks or more with or without other clinical presentation was identified as pulmonary TB suspect and requested by a health worker to provide three sputum samples (spot, morning, and spot) for acid-fast bacilli microscopy. Pulmonary smear positive TB was defined as a positive sputum smear for AFB (acid-fast bacilli) confirmed with one or more positive smears. Pulmonary smear negative was defined by negative smear for AFB with radiological, clinical, and/or histological findings consistent with active TB followed by the decision by a clinician to treat with a full course of TB chemotherapy.

Anti-TB treatment was based on the use of directly observed treatment (DOT), short course chemotherapy for a duration of 8 months (2 months intensive phase and 6 months continuation phase). During the intensive phase, treatment was given daily under the direct observation of a trained health worker or a trained treatment supporter. For the continuation phase, treatment was given monthly and self-administered. Both smear-positive and smear-negative TB patients were treated with the same standardised first-line antituberculosis regimen consisting of rifampicin (R), isoniazid (H), pyrazinamide (Z), and ethambutol (E) in accordance with the NTP guidelines. HIV counselling and testing was offered to all patients, and those who were found to be HIV positive were referred for HIV care and support—antiretroviral therapy (ART) and cotrimoxazole preventive therapy (CPT). Diagnosis and treatment details of TB patients were recorded in routine standard NTP TB treatment cards and registers.

Data collection

All health facilities providing TB services within the slum area were visited by two trained researchers. Relevant data of all new TB patients registered from January 1, 2012 to December 31, 2012 were extracted from the NTP TB treatment cards and registers into a data-collection form designed for this study. Variables recorded included TB registration number, gender, age, HIV status, type of TB, treatment duration, and treatment outcome.

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