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Original Research Article

Assessing the capacity of primary health care centres to provide tuberculosis services in Kaduna State, North-Western Nigeria

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ABSTRACT

Background: Despite earlier successes achieved in combating it, cases of tuberculosis in Nigeria are now on the increase, affecting more people and communities. Primary health care in Nigeria is through ward health system, designed to provide minimum health package to the communities including TB services. This study aimed to ascertain the capacity of PHC centres to provide TB services in Kaduna North senatorial district, Kaduna State, Nigeria.
Methods: Four out of eight local Government areas in the district were randomly selected and one PHC per ward was recruited in the study. In each facility, questionnaires developed from the TB tracer items of the WHO service availability and readiness assessment tool were administered to the facility in-charges and TB/DOTS focal persons.
Results: Forty four facilities were selected from Zaria, Sabon Gari, Makarfi and Kudan LGAs. Almost all facilities (98%) diagnosed TB clinically and 39 (90%) had anti-TB drugs available. National TB guidelines were lacking in 23 (52%) facilities and only 5 (11%) had additional capacity for sputum microscopy. While 35 (80%) TB/DOTS focal persons had received training on TB diagnosis and treatment, only 24 (55%)received training on TB/HIV co-infection and only 8 (18%) received training on multi-drug resistant TB.
Conclusions: While TB services are widely available in the district, urgent need exists for all stakeholders to work together towards equipping those facilities with critical infrastructure that will improve their overall capacity, particularly with regards to comprehensive TB guidelines, laboratory diagnosis and personnel training for effective TB management.

Keywords: Tuberculosis, TB, Primary Health Care, PHC, Kaduna, Nigeria

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* that most often affects the lungs. Usually, infection occurs when a symptomatic case coughs, sneezes or spits, thus, propelling the bacteria to the outside environment.[1] Depending on several factors, susceptible individuals who picked the bacteria may progress from dormant infection to active disease, which manifests with a barrage of symptoms including unexplained fever, weight loss, cough and difficulty with breathing.[2,3] In some situations, distant organs may be affected including the kidneys, spine and the brain.[4]Left untreated, TB complications commonly lead to respiratory failure and death. Despite remarkable successes recorded in combating the disease, since the mid-1980s, many countries have now started witnessing a resurgence of TB, largely attributed to poor living

conditions;international migration, collapse of health care systems, drug resistance and increasing numbers of immunosuppressive conditions like HIV/AIDS.[5-7]

In 2019, an estimated 10 million people got infected with TB globally, resulting in more than 1.2 million deaths. Cases were largely recorded in South-East Asia, Africa and the Western Pacific regions.[8,9] Regional variations were closely associated with level of human development, health expenditure and access, migration policies and burden of HIV/AIDS.[10] Even within regions and sub-regions, few countries continue to bear a disproportionate burden of the disease with only eight countries, Nigeria inclusive, accounting for two-thirds of all TB cases in 2019.[1,8]

The burden of TB in Africa is enormous.[11] In2019, the continent recorded2.5 million cases, accounting for about 25% of the global TB burden in that year. In Nigeria, factors including malnutrition, HIV/AIDS, smoking, diabetes and harmful use of alcohol continue to drive the TB epidemic.[12,13] For instance, the country recorded an estimated 460,000 TB cases in 2019, up from 429,000 in 2018.[14,15] That same year, estimated TB deaths reached 157,000, largely attributed to poor treatment coverage (24%) and an increasing prevalence of drug resistant strains (4.3%).[14,16]

In Kaduna state, limited data exists regarding local prevalence of TB, but a recent analysis of sputum samples from suspected cases in one general hospital using GeneXpert confirmed TB in 17% of samples.[17] Following the Alma Ata declaration in 1978, primary health care (PHC) became the unified global strategy for attaining health for all[18]and since then, Nigeria has made substantial efforts towardsimplementingit.[19-21] The current strategy for the delivery of PHC in Nigeria is through the ward health system (WHS) inaugurated in 2001.[22] In this system, one PHC per electoral ward is selected and upgraded to a model healthcare facility that provides essential health services to a defined section of the population.

Primary health care centres are the first points of contact with national health system and because they are situated closest to the people, they are well positioned to deliver essential services in TB endemic regions. Trained health care workers at PHC level can play key roles in TB prevention and control through early case detection, referral for investigation or treatment, supervised treatment and follow up in the community.[23-25]

Since 2016, the Kaduna State government has embarked on an aggressive PHC revival mission with a target of renovating at least one PHC centre per electoral ward, under the supervision of the state primary health care development agency (SPHCDA). As of 2019, the renovation of 191 out of 255 PHCs was complete.[22] Despite this achievement, however, the capacity of those facilities to provide basic TB services remains unknown. This study, therefore, aims to ascertain the capacity of those facilities to provide TB services in Kaduna, using Kaduna North senatorial district as a case study.

METHODS

Kaduna is one of the 36 states of Nigeria with an estimated population of 9 million people spread across 23 local Government areas (LGAs).[2] The state is divided into three senatorial districts North, South and Central. This cross-sectional study was conducted among upgraded PHC facilities, often called 255s, in Kaduna North senatorial district which comprised of eight LGAs – Ikara, Kubau, Kudan, Lere, Makarfi, Sabon Gari, Soba and Zaria.

Cluster sampling was used to randomly select four among the eight LGAs in the senatorial district. All the upgraded PHCs in the selected LGAs were automatically included in the study and their total number equals the total number of electoral wards in the four LGAs. Data was collected using the standardized WHO service availability and readiness assessment (SARA) tool with specific focus on tuberculosis tracer items.[27] The questionnaires were administered by trained research assistants and only facility in-charges and TB/DOTS focal persons were allowed to respond to the questionnaires on behalf of their facilities. In all the LGAs visited, permissions to conduct the study were obtained from the Directors of Public Health as well as the facility in-charges or second in-charges depending on their availability. Data collection took place between October and December, 2020 with approval from Ahmadu Bello University teaching hospital health research ethics committee. Data was analysed using statistical package for the social sciences version 23 (IBM, SPSS, Chicago, Illinois, United States) and presented using frequencies and percentages. Bar charts were drawn using Microsoft Excel.

RESULTS

Four LGAs, namely; Zaria, Sabon Gari, Makarfi and Kudan were selected. All the eligible PHCs in these LGAs were automatically included in the study. Table 1 shows a breakdown of the number of PHCs included in each LGA, corresponding to the total number of electoral wards in the LGA. Zaria had the 13 (29.6%) of such facilities, followed by Sabon Gari with 11 (25.0%). In total, data was collected from all the 44 upgraded PHCs in the area, giving a response rate of 100% (Table 1).

Tuberculosis service availability and readiness among the PHC facilities in the study area is shown in (Figure 1). Majority (98%) diagnose lung TB based on clinical assessment and up to 95% dispense anti-TB drugs upon confirmation of diagnosis. However, on the day of the survey, only 39 facilities (90%) had anti-TB drugs available within the facility. In addition, more than half of the facilities (52%) had no national TB treatment guidelines.

The various TB diagnostic methods being used by the TB/DOTS focal persons in the study area is shown in (Figure 2). Clinical diagnosis was the most widely used approach, obtainable in 43 (98%) of the PHCs. Sputum microscopy for acid fast bacilli (AFB) was done in only 5 (11%) PHCs.

Table 1: PHC facilities in the four LGAs selected for the study, October, 2020.

LGAs	Number of PHCs	%
Zaria	13	29.6
Sabon Gari	11	25.0
Makarfi	10	22.7
Kudan	10	22.7
Total	44	100.0

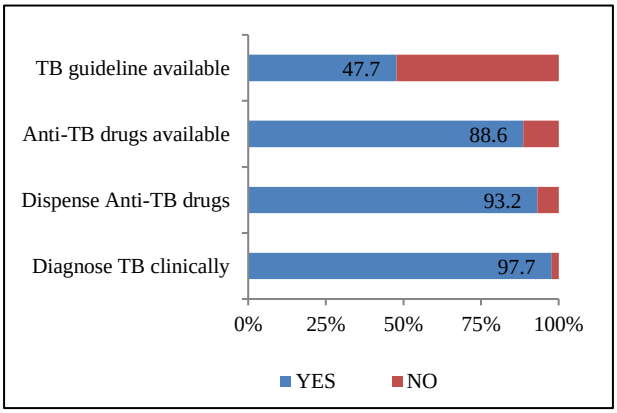

Figure 1: Tuberculosis service availability and readiness among 44 upgraded PHC facilities in the study area, October, 2020.

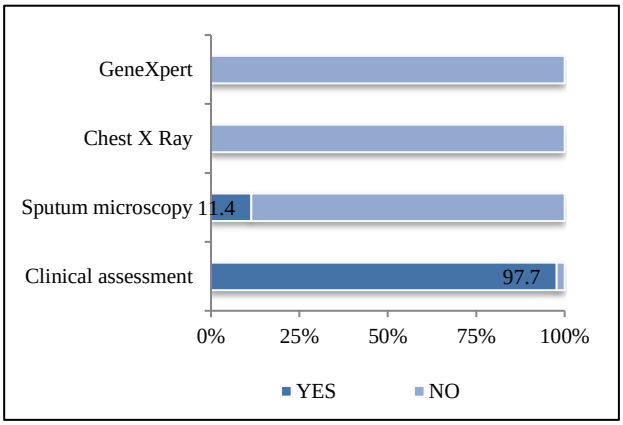

Figure 2: Availability of TB diagnostic services in 44 upgraded PHC facilities in the study area, October, 2020.

None of the facilities had additional capacity for chest X-ray or GeneXpert. However, all facilities that diagnose TB clinically also collect samples for onward transmission to either a designated laboratory or the closest secondary health facility for laboratory confirmation. The percentage of facility in-charges or TB/DOTS focal persons who received various TB trainings in the two years preceding our study as shown in (Figure 3). Majority (80%) received training on TB diagnosis and treatment and up to 24 (55%) were trained on TB infection prevention and control as well as TB/HIV co-infection. However, only 8 (18%) received training on Multi-Drug Resistant TB (MDR-TB). According to the respondents, those trainings were provided in form of group workshops spanning several days at designated venues, usually the LGA secretariats. Resource persons were commonly involved in such trainings, who often follow up with facility-based supportive supervisions.

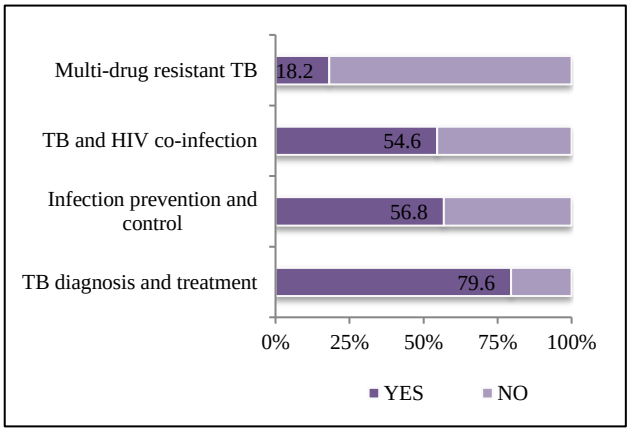

Figure 3: Tuberculosis training received by PHC facility in-charges and TB/DOTS focal persons in the two years preceding the study, October, 2020.

DISCUSSION

This study aimed to assess the capacity of PHC facilities to provide basic TB services in Kaduna North senatorial district. We found that upgraded PHCs were widely available in each LGA. Majority did offer TB diagnosis based on clinical assessment and send samples to designated facilities for laboratory confirmation. Where results came back positive, most of those centres had anti-TB drugs available to initiate supervised treatment. This appears to support both regional and national strategic plans of introducing, strengthening and integrating TB services to the existing PHC package.[23,28] Several countries including South Africa, Egypt and Indonesia have long adopted this plan where TB services are essentially provided at the PHC level.[24,25,29] We found that only half of the PHCs could produce the national treatment guidelines when prompted to do so. According to the WHO, this document provides guidance for effective diagnosis and treatment and, adherence to TB treatment guidelines is crucial to achieving cure while at the same time preventing the emergence of drug resistance.[30] A recent study done in Oyo and Anambra states of Nigeria found that up to 80% of facilities had TB treatment guidelines.[31] Another study done in Tanzania found that 70% of all facilities did have TB diagnosis and

treatment guidelines.[32] Although direct comparison cannot be made given that both primary and non-primary health facilities were included in these studies, the difference highlights the important need for equipping PHCs with simple, comprehensive and easy to use TB diagnosis and treatment guidelines. Our study also found that nearly all the facilities visited relied on clinical assessment for diagnosis of TB and only 11% had additional capacity for microscopic diagnosis. None of the facilities visited had capacity for imaging or molecular testing. To confirm the disease, samples must be sent to reference centres for bacteriological diagnosis. This sharply contrasts with findings from a similar study in Ethiopia where up to 57% of facilities had additional capacity for sputum microscopy.[33]The programmatic approach of sending samples to a reference laboratory for diagnosis may add to TB diagnostic delay commonly encountered in lower level health facilities and private clinics.[34,35] A recent meta-analysis found that such diagnostic delays could last for up to 29 days or longer.[36] Several studies have linked treatment delays with adverse TB treatment outcomes including severe disease, low cure rates, higher infectivity and drug resistance.[37-40]

With regards to TB training, our study found that majority of the facility in-charges and TB/DOTS focal persons received relevant trainings in the past two years. Such trainings mostly covered TB diagnosis and treatment, TB prevention and control and TB/HIV co-infection. Similar pattern of trainings were noted in Ethiopia, where majority of the health workers received training on TB diagnosis and treatment.[34] Training on TB diagnosis and treatment is essential as it provides health workers with the skills necessary to make presumptive diagnosis and initiate the sample collection process and supervised treatment. Of particular concern, however, was the small number of health workers who received training on MDR-TB. There are indications that this aspect of TB management is widely under recognized. For instance, in Anambra and Oyo states of Nigeria, less than 24% of health workers were trained on MDR-TB across multiple healthcare levels.[31] Given the fact that MDR-TB is one of the major drivers of global TB epidemic, there is need for its inclusion in the current training package for PHC workers. Such a move will likely improve their ability to provide holistic TB care including TB infection prevention and control, MDR-TB detection, patient-centred treatment needs and disease surveillance.

CONCLUSION

Primary health care centres were widely available in the district, majority of which provided TB services including presumptive diagnosis based on clinical assessment, sample collection and dispensing of anti-TB drugs. Tuberculosis treatment guidelines were however lacking in many facilities and majority had limited capacity for TB diagnosis beyond clinical assessment. Although most of the health workers were trained on TB diagnosis and treatment, a significant proportion of them appeared not to receive any training on other important aspects of TB management, particularly TB/HIV co-infection and MDR-TB.

Recommendations

Current study has several programme recommendations, key among which is the need for equipping all PHCs with simple, up to date and comprehensive TB treatment guidelines. This will guide their activities towards a more effective case identification process, safer patient and sample handling as well as successful case treatment. In addition, providing some PHC facilities with additional capacity for laboratory diagnosis will go a long way in cutting the delays associated with laboratory confirmation and its consequences. Lastly, it is hoped that more efforts will be put in place towards training and re-training of health workers in all PHC facilities to increase their overall capacity for comprehensive TB management.

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