

Tuberculosis Incidence and case Notification Rate in the North Central States of Nigeria in 2018: Cross-States Comparison

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Abstract

Aim: Tuberculosis (TB) continues to be a major killer infectious disease globally especially among vulnerable young adults. TB case notification and incidences provide good estimates of the TB burden of a country. The aim of this article therefore is to provide an insight into the TB situation in the six states that made up the North Central Zone (NCZ) of Nigeria in 2018.

Methods: Retrospective epidemiological data that are routinely collected by the respective TB control programme in the NCZ. TB case notification is calculated by dividing the number of TB cases notified in 2018 by the extrapolated population (from 2006 census population) for the state expressed per 100,000 populations in the year under review.

Results: TB case notification rate (CNR) is highest in Nasarawa state (87/100,000) when compared with the other states, closely followed by Benue state (73/100,000). Kwara state (22/100,000) has the lowest CNR, others are: FCT (37/100,000), Kogi state (27/100,000), Niger state (35/100,000), and Plateau state (57/100,000). TB incidence in the different states closely mirrors the TB CNR.

Conclusion: TB case finding intervention in the NCZ should be contextualized based on prevailing TB driving factors if the aim of effective TB program control will be achieved with focus on Nasarawa state given its high CNR and incidence in the region.

Keywords: NCZ, TB incidence, TB case notification rates, TB Active case finding.

Introduction

Tuberculosis (TB) is the single leading infectious disease killer globally with more devastating effect in countries with vulnerable population. In 1994, TB was declared a global emergency with introduction of proven strategies: DOTS strategy (1994-2005), STOP TB partnership strategy (2006-20015) and End TB strategy (2006-2035), however, the road to global TB control seems to be in the distant future despite gains recorded in terms of the number of lives saved between 2000 and 2014. The 2018 United Nation High Level Meeting on TB in Geneva, Switzerland by Head of countries, is a testament to the danger unchecked TB transmission poses to our world today [15].

Nigeria is a high burden country for TB, HIV and Multidrug resistant TB (MDR-TB). According to the World Health Organization (WHO) global TB report for 2019, Nigeria

notified 106, 533 in 2018 with a TB case fatality ratio (estimated mortality/estimated incidence) of 38%. The country's high prevalence for Human Immunodeficiency Virus (HIV), extreme poverty, weak health system etc. have continued to support transmission of new TB infection [19]. Nigeria is one of the eight countries that accounted for two thirds of the global TB cases reported in 2018. Others countries are: India (27%), China (9%), Indonesia (8%), Philippines (6%), Pakistan (5%), Bangladesh (4%), and South Africa (3%). TB has remained a major public health threat in Nigeria despite the slight increases recorded in TB case finding in the country in the last three years: 2016 (100,433), 2017 (104,904) and 2018 (106,533). The huge number of MDR-TB, 2,275 diagnosed in 2018 and the fact that 17% (380) of diagnosed MDR-TB patients were loss to follow-up before initiation of treatment are causes for concern [19].

The North Central Zone (NCZ) is one of the six geo-political zone in Nigeria. It is made up of six states (Benue, Kogi, Kwara, Nasarawa, Niger and Plateau) and the Federal Capital Territory. 15, 627 TB cases (all forms) were notified in 2018 accounting for 14.6% of the total TB case notification reported to WHO through the National TB Control Program (NTP) for Nigeria. The zone has a total of 6,861 health facilities to a population of 31,311,452 people. TB Directly Observed Treatment Short course (DOTS) is obtainable in 1,508 (22.0%) health facilities. Health facility coverage for microscopy and Xpert MTB/RIF assay Local Government Area (LGA) coverage in 2018 is 529(7.7%) and 98 (53.7%) respectively. From the foregoing therefore, it is obvious that TB service coverage for the zone is low.

An important step in the control of TB is early TB diagnosis and initiation of treatment for those affected, and this is in tandem with the WHO End TB strategy. The number of TB case detected and started on treatment in NCZ as in Nigeria is low when juxtaposed with the estimated TB burden for the zone. Therefore, as the country raises towards achieving important milestone targets for the End TB strategy, it is important to address aforementioned concerns in the zone. This study provides an insight into TB case incidence and case notification rate (CNR) for all states that made up the NCZ by way of comparative analysis of epidemiological data obtained from the States TB Control Programs of all states making up the NCZ for 2018.

Methods

This is a retrospective study. Epidemiological data routinely collected through the TB control program of the respective states in the NCZ in 2018 was collected, cleaned and analyzed. CNR refers to the number of total new and relapsed TB cases reported to WHO through the National TB Control Program (NTP) annually expressed per 100,000 populations. The estimated TB burden for all states in the NCZ was calculated based on the national incidence for TB in Nigeria, 219/100,000 as reported in the WHO Global TB report for 2019. To obtain the TB case notification rate routine data collected quarterly through standardized TB data templates were used. The templates are designed to speak to data element such as: Bacteriologically and clinically diagnosis, New TB cases, Relapse TB cases etc.

Case definitions for these terminologies were as defined by WHO 2013. TB incidences and CNR for each states were then calculated. In order to generate, CNR for each state, total of new and relapsed TB case was then divided by the respective state extrapolated population for 2018 multiplied by 100,000. 2018 population was extrapolated from the 2006 Nigeria census figure as presented by the Nigeria National Bureau of Statistics.

Results

The incidence rate for TB (including TB+HIV) in 2018 ranged from 22 new TB case per 100,000 populations in Kwara to 87 new TB cases per 100,000 populations in Nasarawa (Table 1.0). Benue state had the second highest TB incidence at 73 new TB cases per 100,000 populations. TB incidences in the remaining states of FCT, Kogi, Niger and Plateau ranged between 27-57 new TB cases per 100,000 inhabitants. The incidence of TB in Nasarawa and Benue is almost 2-4 times what is obtainable in Kwara, Kogi, FCT and Niger. TB notification for children less than 15 years is generally low but much lower in children 0-4 years. The proportion of total TB cases notified in 2018 that were children under 15 years of age was 7.6% (1,183/15,627). Kogi reported the lowest number of children with absolute number of TB cases. TB was notified more among male, in the ratio 2:1, Male to Female ratio, in Kogi and Nasarawa state however the ratio of male to female is 1:3:1. More of the TB cases notified were bacteriological diagnosed. The ratio of bacteriological diagnosis TB cases to clinical diagnosis TB cases are 3:1. FCT, Nasarawa, Benue and Plateau has high number of extra-pulmonary TB cases notified. 98% of TB cases notified know their HIV status in the NCZ with 20.7% of the TB cases notified in the zone co-infected. Benue state has the highest number (1,162, 35.9%) of TB/HIV co-infected cases among notified TB cases in 2018. All the states in the zone has an average ART uptake of 85%, lowest in Plateau state (53.7%) and highest in Kogi state (100%). Absolute TB case finding was highest in Benue state 4,652 (29.8%) (Table 2.0).

Discussion

The highlights of the report are TB incidence and case notification rate for states in the NCZ of Nigeria. Interestingly, Benue state notified the

highest number of absolute TB cases (4,652) in 2018, Nasarawa state however, has the highest TB case notification rate of 87 new TB cases per 100,000 populations. Kwara state is lowest in terms of the TB cases notified, incidence and CNR. The high number of vulnerable population in Benue: internally displaced persons, high prevalence for HIV, hard-to-reach areas, pockets of crises regions and the overall higher number of humans of all ages: women, men and children, within the state explains the high number of TB cases notified by the state. Despite the aforementioned for Benue state, the state could only notify 34.8% of the estimated TB burden for 2018. All the states in the zone have challenges with TB case notification despite the high incidence. Nasarawa notified 42.4% of her estimated TB burden for 2018 (highest for the zone) (Table 1:0). NCZ despite being the third largest geo-political zone, closely behind the Northwest and Southwest geo-political zones, in terms of population, notified 14.6% (15,627/106,533) of the National TB cases notified to WHO by the NTP in 2018 (Table 1:0). Low TB service coverage, poor infrastructure and a weak health system are some of the factors responsible for low TB case notification in the zone. TB is a disease of the poor, and poverty is a major driving factor in the transmission, progression, severity and prognosis for the disease yet, the NCZ TB case notification was below the national TB notification for Nigeria in 2018 which was 25%.[19] Given that the drivers of the TB epidemic are present in Nigeria, emphasizes on low TB service coverage for TB, poor access to care and weak system can explain why the achieving the WHO End TB strategy

might not be feasible except steps are taken to addressing these challenges. In conclusion, the NCZ as with Nigeria has TB as a major public health threat. Despite the burden of the estimated number of TB cases in the zone, TB case notification remains low. If Nigeria will be part of the global community to end TB in 2035 and reduce TB incidence by 80% in 2030, then the country will have to rapidly accelerate a fall in TB incidence by galvanizing all her geo-political zones including the NCZ to do more in TB case finding and case notification. TB program managers should contextualize TB case finding activities in the respective states based on known epidemiology of the disease in their states.

Conclusion

We conclude that TB remains a major disease of public health importance in the NCZ of Nigeria. TB incidence is high in the region but the rate of TB case detection and notification is low when compared with the expected estimated TB incident cases to be notified based on population. TB implementers and donors should conceptualize interventions based on the disease burden per states in the zone if the goal of ending TB by 2030 as proposed in the End TB strategy will be a reality in the zone and in Nigeria at large.

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Tables

Table 1. Estimated TB burden and TB case notification rate for states in the North Central Zone in 2018

State	2006 population census	Annual growth rate	2018 estimated population extrapolated from 2006 census	TB Case Notification Rate /100,000 population	Estimated TB burden @ 219/100,000 National TB incidence	% of estimated TB burden notified in 2018
Benue	4,253,641	3.00%	6,096,868.76	73	13352	34.8
FCT	1,406,239	9.30%	4,292,712.27	37	9401	18.0
Kogi	3,314,043	3.00%	4,750,115.31	27	10403	13.0
Kwara	2,365,353	3.00%	3,390,330.03	22	7425	10.5
Nasarawa	1,869,377	3.00%	2,679,433.04	87	5868	42.4

Niger	3,954,772	3.00%	5,668,491.04	35	12414	16.4
Plateau	3,206,531	2.70%	4,433,501.45	57	9709	27.0
Total/Average	20,369,956	3.86%	31,311,451.91	48	68572	23.2

Table 2. Total number of TB case notification (all forms) in the North Central Zone by state in 2018

TB case notifications, 2018	Benue	FCT	Kogi	Kwara	Nasarawa	Niger	Plateau
Total new and relapse	4467	1597	1286	735	2340	1990	2528
- % with known HIV status	99.6%	97.5%	100%	90.5%	99.5%	100%	94.9%
- % pulmonary	98.2%	94.1%	96.9%	94.2%	92.9%	97.7%	89.7%
- % bacteriologically confirmed ^{ooo}	67.0%	72.4%	82.2%	74.1%	83.0%	82.0%	59.6%
- % children aged 0-14 years	11.0%	6.2%	3.2%	6.0%	8.0%	5.6%	6.2%
- % women	38.8%	37.4%	40.8%	38.5%	40.4%	34.2%	33.3%
- % men	61.2%	62.6%	59.2%	61.5%	59.6%	65.8%	66.7%
TB treatment coverage (notified/estimated incidence), 2018	34.8%	18.0%	13.0%	10.2%	42.4%	16.4%	27.0%
Total cases notified	4652	1688	1349	755	2490	2042	2626

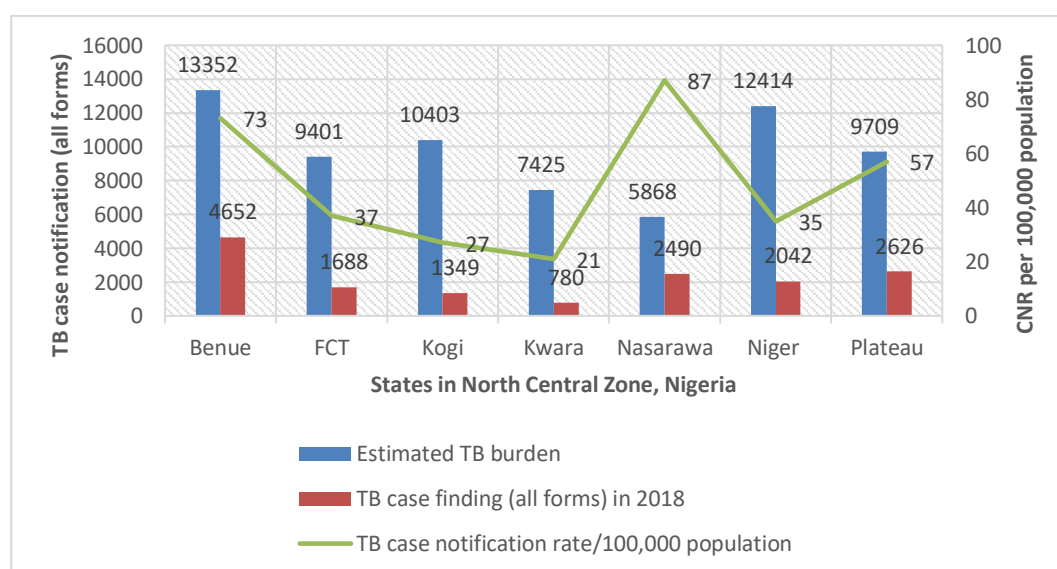


Figure 1. TB case notification per 100,000 populations for 2018 by states in the NCZ

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