http://jbrcp.net

2018 Journal Impact Factor: 1.10
Print ISSN: 2636-7378 | Online ISSN: 2651-5865

Original Article

Weak Intra-facility Referral Linkages: Missed Opportunity for Tuberculosis Case Detection and Treatment in a Tertiary Health Facility in Benue State, Nigeria

Audu O,[1*] Ogiri OS,[2] Igbabul S-A,[3] Ijachi OO,[4] Enokela PO,[5] Anejo-Okopi J.[5]

[1]Department of Epidemiology and Community Health and [5]Department of Pharmacology, College of Health Sciences, Benue State University, Makurdi, Benue State, Nigeria

[2]National Professional Officer-TUB, WHO Zonal Office (North Central), 23 Okada Road, Minna, Niger State, Nigeria

[3]Benue State Epidemiology and Disease Control Unit, Makurdi, Benue State, Nigeria

[4]Department of Internal Medicine Benue State University Teaching Hospital, Makurdi. Benue State, Nigeria

[5]Department of Microbiology, Faculty of Natural Sciences, University of Jos, Plateau State, Nigeria

***Correspondence**
Dr. Audu Onyemocho
Email: *audeeony@yahoo.com*

Article information
Date Submitted: *22/10/2020.*
Date Accepted: *13/11/2020*
Date Published: *Dec. 2020*

: doi.org/10.46912/jbrcp.197

ABSTRACT

Despite the scale up of quality-assured Tuberculosis diagnostic and treatment strategies over the years, case detection rate remains a serious challenge globally and particularly in Nigeria. Integrated service delivery is essential to addressing some of the challenges, but it's often neglected especially in low income settings. Recognizing these limitations, a 27-months retrospective review of all presumptive Pulmonary Tuberculosis cases sent to the directly observed short course treatment centre of Benue State University Teaching Hospital, a tertiary health institution in north central Nigeria was conducted to assess the source of referrals and diagnostic processes including outcome of the tests. Chi- square (χ2) test was used for test of association between the intra-facility linkages/referrals system and the tuberculosis case detection rate, with statistical significance set at p-value of ≤5%. There were 918 presumptive Tuberculosis cases with males to females ratio (M: F) of 1:1.3. The mean age of patients was 41.0.0 ±18.4 years. Majority (33.7%, n=) of the referrals were from general outpatient department of the hospital, followed by sexually transmitted infection clinic (26.0%) and Paediatrics department (1.6%, n=). The diagnostic positive rate was 145(15.8%). Overall, 295(32.2%) did not collect their results, of these 76(25.8%) were positive and 219(74.2%) were negative. The relationship between the missed cases and the weak intra-facility referral linkages was statistically significant (p=0.000). The hospital management should consider the engagement of all relevant health care providers on efficient two-way referral system towards ensuring adequate Tuberculosis case notification and prompt treatment.

Keywords: *Benue, Diagnosis, Missed Opportunity, Referral, Tuberculosis, Nigeria*

INTRODUCTION

It is over 25 years that Nigeria adopted the World Health Organization (WHO) Tuberculosis (TB) management strategies; starting from the Directly Observed Treatment Short Course (DOTS) therapy in 1998 to the recent END TB strategy[1-4]. One of the specific objectives of these strategies is early diagnosis of presumptive TB cases via sputum smear microscopy and Gene-Xpert MTB/RIF assay.[5-7] There have been a progressive increase in expenditure on the diagnostic kits in the recent time to achieve this aim. However, the global TB case notification still fall short of the investments due to poor mechanisms of communication of laboratory results to facilities and to patients and that in turn affects the continuity of management of such patients.[8-10]

In 2016, Nigeria notified 100,434 of all forms of TB cases leaving a gap of over 300,000 missing TB cases either not diagnosed or diagnosed but not reported.[11] In 2017, the country also hads the highest number of undiagnosed TB cases in Africa and third in the world, with treatment coverage of only 25%.In the same year, Nigeria contributed 4% of TB burden and 9% of missing TB cases globally.[12] In Benue state, out of expected 13,174 TB cases in 2018, only 4,654 (35.3%) were reported.[13]

Low TB case notification undermines TB control efforts globally, because the undiagnosed and untreated TB cases sustain infection transmission and disease burden as such individuals increase their risk of transmitting the disease to others. In addition, such individuals end up having poor health outcomes, or they and their family will suffer distress and economic hardship.[14,15]

Integrated service delivery, timely linkages to and retention in care are critical steps in addressing some of these challenges, but there are significant weaknesses in TB care/treatment cascade, particularly in low income settings.[16-19] Therefore, we assessed the effect of weak two-way intra-facility referral linkages in relation to tuberculosis case detection rate in Benue State University Teaching Hospital (BSUTH), a tertiary health institution in north central Nigeria.

MATERIALS AND METHODS

Study Setting

Benue state is located in the north central geographic zone of Nigeria. The State has an estimated population of 6,196,102 (i.e.2.8% projection from 2006 National population figures of 4,219,244). There are two main ethnic groups, Tiv and Idoma. Other ethnic groups include Igede, Etulo and Jukun. The Benue people are mostly farmers engaged in subsistence and commercial farming. A small percentage of the populations are involved in petty trading and civil service jobs. The TB DOTS programme of Benue state started in 2001 as a pilot project in four local government areas (LGAs); Gwer, Otukpo, Logo and Ohimini. Over the years the program achieved 100% DOTS coverage in all the LGAs (i.e. at least one DOTS facility in each LGA), using the WHO set standard of one (1) DOTS Centre per 25,000 populations. By the end of 2018, the program had 438 DOTS clinics, and 28 Gene-Xpert laboratories.Of the total, Makurdi has 31 DOTS Centres and 4 Gene-Xpert Centres.[13]

Benue State University Teaching Hospital (BSUTH) where the study was carried out is a tertiary health care institution in Makurdi. It was established in 2012 to provide specialized health care services for the people of Benue State and the entire Nigeria. Other goals were to provide conducive environment for the training of health care professionals and to carry out relevant research for the improvement of the health of the people of Nigeria and beyond. The DOTS Centre of BSUTH was established in 2013. It is manned by a consultant epidemiologist, 3 resident Doctors, a laboratory scientist, 2 nurses, and three community health workers. The monthly presumptive TB cases turnover averages 40 cases. Presumptive TB clients report to the DOTS Centre of the hospital directly by themselves or as referrals from other clinics within the hospital. Patients from other peripheral health facilities may also accessed the DOTS clinic as referrals.

Study Design

A retrospective study design was employed for this study.

Study Population

All presumptive pulmonary TB patients referred from other clinics of the BSUTH and those referred from other catchment areas to the DOTS centreers of the BSUTH between January 2017 and March, 2019, were included for the study. Patients who visited DOTS Centre primarily were excluded from the study.

Data collection

The data sources used were the presumptive TB and laboratory request register. The relevant independent variables used were the age of patients, sex and source of referrals. The outcome variables were the result of the sputum AFB and or the Gene-Xpert carried out and whether the result was retrieved for use or not

.

Ethical Considerations

Ethical approval for the surveys was obtained from the ethics committee of BSUTH before the commencement of the study.

Data Analysis

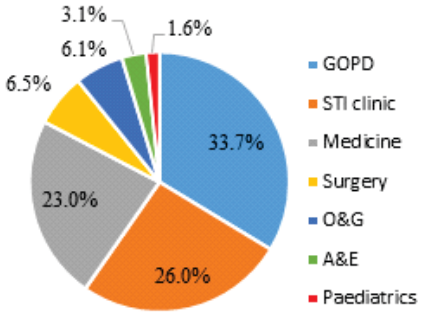
Data extracted from the data sources were entered into predesigned software in Statistical Packages for Social Sciences (SPSS) version 23 (IBM corp. Released 2018. IBM SPSS statistics for windows, version 19.0, Armonk, NY: IBM Corp). Frequency tables, charts, were used to summarize the independent variables of interest. The investigation results were tested with the post investigation status of the result (whether it was retrieved for use or not). Chi- square ($\chi 2$) test was used for test of association between the intra-facility referral system and the case detection rate, with statistical significance set at p-value of $\leq 5\%$.

RESULTS

There were 918 presumptive TB cases seen within the reviewed period. Table 1 and Figure 1 shows the age/sex distribution and source of referrals of the patents. Of the total, the males were 511 (55.7%) while females were 407(44.3%). The patients were between 5 - 68 years old. The modal age group for both male and female was 35-44 years (26.6% and 31.0% respectively) and the overall mean age of the patients was 41.0.0 ±18.4 years. Majority (33.7%, n=309) of the referrals were from general outpatient department (GOPD) of the hospital, followed by sexually transmitted infections (STI) clinic (26.0%, n=239), internal medicine (23.0%, n=211), surgery (6.5%, n=60), Obstetrics and Gynecology (6.1%, n=56), accidents and emergency (3.1%, n=28) and Paediatrics department (1.6%, n=15).

Table 1: Age and Sex distribution of presumptive TB cases Reviewed

Age group (Years)	Sex n(%)		Total
	Male	Female	
<15	9 (1.8)	6(1.5)	15 (1.6)
15 - 24	50 (9.8)	58(14.3)	108 (11.8)
25 - 34	118 (23.1)	106 (26.0)	224 (24.4)
35 - 44	136 (26.6)	126 (31.0)	262 (28.5)
45 - 54	109 (21.3)	67(16.5)	176 (19.2)
55 - 64	61(11.9)	33(8.1)	94 (10.2)
≥65	28(5.5)	11(2.7)	39 (4.2)
Total	511 (100.0)	407(100.0)	918 (100.0)



Outcome of the Investigation

Of the total 918 presumptive TB cases, the diagnostic positive rate was 145(15.8%), while the negative rate was 773(84.2%); 623(67.8%) of the total results were

collected and 295(32.8%) were not collected. Among the 295 results not collected 25.8% were positive and 74.2% were negative. The overall missed diagnostic positive cases was 76 (8.3%). The weak follow-up mechanism between the departments from where the test was requested for and the DOTS center where the investigation was conducted was the main reason for the non-retrieved results. The relationship between the missed diagnostic positive cases (8.3%) and the weak intra-facility referral linkages was statistically significant (p=0.000).

Table 2: Distribution of Sputum Microscopy results by Post Investigation Status

Test Results	Post investigation Status n(%)		Total	Test statistics
	Result Collected	Result Not Collected		
Positive	69(11.1)	76(25.8)	145 (15.8)	X^2=32.47 df=1
Negative	554(88.9)	219(74.2)	773(84.2)	P= 0.0000
Total	**623(100.0)**	**295(100.0)**	**918(100.0)**	

DISCUSSION

Linkages or referrals between health centers and services at hospitals or in the community, or between separate clinics organized within a health facility, or between clinicians and laboratory or pharmacy service delivery points has been advocated as a major step of bringing smaller components of health sector into a single system that function as one.[20] In our study this was actually done. Majority of the referrals were from the GOPD, followed by STI clinic, internal medicine, surgery, Obstetrics and Gynecology, accidents and emergency, and the least was the Paediatrics department (Figure 1). Our finding is consistent with 35.7% reported in a study conducted in kenya.[21] The report in our study also supports the observation that outpatient departments of many hospitals continue to be the major point of service delivery route to specialized clinics within health facilities.[22,23]

Considering the WHO Set Standard of 1DOTS center per 25000 populations and the Nigerian TB incidence rate of 219/100,000 population, the total notification cases of 145(15.8%) in our study centre was low. That may explain the reason behind the national and global low case detection rate.[12] On the other hand, the low referrals from the Paediatrics department in this study is consistent with the Benue state annual report. For instance, out of expected 3,522 Childhood TB cases in 2015 only 112 (2.6%) were reported.[24] However, it is possible that more of clinical diagnosis is being done for children hence the low referral for bacteriological diagnosis in our study.

Our study displayed evidence of coordination as most presumptive TB cases identified in most of the departments are linked to the DOTS unit, but with regards to exchange of information, 32.8% of the total results were not communicated back, and 25.8% of these results were positive while 74.2% were negative (Table 2). Some of the presumptive TB with negative results in our study could still be having TB; by not collecting their results for review and further clinical evaluation also contributes to missed opportunity for the clinical diagnosis of TB. Similarly, the implication of positive results not retrieved is missed opportunity for treatment and care. These positive cases may therefore continue to transmit TB in the community and they as well face longer period of morbidity and mortality over time. The result of our study is also a demonstration of wastage of scarce health resources through duplication of services and underutilization of results from the DOTS Centre.

In our study the relationship between the missed positive cases (8.3%) and weak intra-facility referral linkages within the BSUTH was statistically significant (p=0.000). TB just like any other issue of public health importance, requires different levels of health workers that benefits from both intra-facilityate and inter-faculty referral cascade system. The apparent shortcomings of non-retrieval of results by the primary health care providers in this study may be linked to the high turnover of patients in the outpatient departments and high patient health providers' ratio. It may have also resulted from poor commitment of the health care providers to their patient's care. All these require the need for: (1) Reorienting health care workers for proper health education of presumptive TB on the need to collect their results and revert to the clinic irrespective of the result, (2) Streamlining the health

system for the retrieval of laboratory results and (3) Capacity building in the operationalization of the National TB and leprosy Control Program (NTBLCP) diagnostic algorithm. What of strengthening and enforcement of the hospital management referral policy most especially as concerns TB management in the hospital?

Overall, our study has demonstrated that case reporting for TB in BSUTH was very low, and one major factor was that the TB data collected in two centresers were not properly integrated. It is important to address this situation, that is similar in most Nigerian hospitals. To do so, the hospital management should educate all relevant health care providers on efficient two-way referral system to ensuring adequate TB case notification and prompt treatment. In addition, referrals should be accompanied with forms to get back to the primary provider and detail report of all pertinent findings and recommendation should be directed to the referring doctor and may outline opinion to the patient.

Conflict of Interest

There is no conflict of interest among the authors

Acknowledgments

Our appreciation goes to the staff of BSUTH DOTS centre who facilitated access to the required registers.

REFERENCES

1. FMOH. Nigeria expansion plan for the programmatic management of drug resistant tuberculosis, June 2015- June, 2018.
2. WHO. The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.37).
3. The Global Plan to Stop TB, 2006–2015. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.35
4. WHO. The End TB Strategy. Global strategy and targets for tuberculosis prevention, care and control after 2015. Geneva: WHO; 2014. p. 2.
5. WHO. Compendium of WHO guidelines and associated standards: ensuring optimum delivery of the cascade of care for patients with tuberculosis, second edition. Geneva: WHO; 2018. Licence: CC BY-NC-SA 3.0 IGO 61.
6. Alfred N, Lovette L, Aliyu G, Olusegun O, Meshak P, Jilang T, et al. Optimising mycobacterium tuberculosis detection in resource limited settings. BMJ Open 2014;4(3):e004093.
7. Boehme CC, Nicol MP, Nabeta P, Michael JS, Gotuzzo E, Tahirli R, et al. Feasibility, diagnostic accuracy, and effectiveness of decentralized use of the XPERT MTB/RIF test for diagnosis of tuberculosis and multidrug resistance: a multicentre implementation study. Lancet North Am 2011;377(9776):1495–505.
8. Nkengasong JN, Nsubuga P, Nwanyanwu O et al. Laboratory systems and services are critical in global health: time to end the neglect? Am J Clin Pathol 2010; 134:368–73. [PubMed] [Google Scholar]
9. Audu, O, Igbabul, A., Anejo-Okopi, J., Joshua, I.A., Anefu, G.O, Isa, S.E. Late Commencement of Anti-Tuberculosis Drugs in Three Directly Observed Treatment Short Course Centers in Benue State Nigeria: A Neglected Correlate of Tuberculosis Management. Journal of Tuberculosis Research. 2017; 5: 95-105. (Accessed at https://doi.org/10.4236/jtr.2017.52011 on 6th May, 2019).
10. WHO. Finding the missing TB cases. Optimizing strategies to enhance case detection in high HIV burden settings.
11. WHO. Global Tuberculosis report. Geneva: WHO 2017
12. WHO. Global Tuberculosis report. Geneva: WHO 2018. Pg 27 Licence: CC BY-NC-SA 3.0 IGO. (Accessed at https://www.who.int/tb/publications/global_report/en/ on 10th October, 2019).
13. MOH, Benue State, Nigeria. Annual *Tuberculosis Report*. 2018
14. Arnadottir T . Tuberculosis and Public Health Policy and Principles in Tuberculosis Control. Paris, France: International Union Against Tuberculosis and Lung diseases, 2009. Kogieleum N
15. Santhanalakshmi G, Satvinder S, Jonathan S, Nesri P,

Quality of TB care among people living with HIV: Gaps and solutions. Journal of Clinical Tuberculosis and Other Mycobacterial Diseases. 2019; (17): 10012

16. Aruna, O., Nsofor, I., Oyediran, K. (2018). Tuberculosis in Nigeria: Rapid Assessment of Infectious Disease Surveillance and Reporting. Chapel Hill, NC, USA: MEASURE Evaluation, University of North Carolina. 2018
17. Chin DP, Hanson CL. Finding the missing tuberculosis patients. J Infect Dis 017;216(suppl_7): S675–8.
18. Naidoo P, Theron G, Rangaka MX, Chihota VN, Vaughan L, Brey ZO, *et al*. The South African tuberculosis care cascade: estimated losses and methodological challenges. J Infect Dis 2017;216(suppl_7): S702–13
19. Mariotti G, Gentilini M and Dapor V. Improving referral activity on primary-secondary care interface using an electronic decision support system. Int J Med Inform 2013; 82: 1144–1151.
20. NPHCDA, Nigeria. Integrated training manual for primary health care workers in Nigeria. 2017; pg1-12
21. MOH, Kenya, USAID. State of the Health Referral System in Kenya: Results from a Baseline Study on the Functionality of the Health Referral System in Eight Counties. 2013. (available at www.measureevaluation.org)
22. Tabish SA. Outpatient Services in a Hospital in Planning, Organisation & Management of Hospitals & Nursing Homes, Edition: First (Reprint), Publisher: JayPee Brothers Medical Publishers, 2011
23. Asuke S, Sabitu K, Ibrahim MS, Pattern of referral before and after referral intervention among primary health centres in North-Western Nigeria. Arch Med Surg [Serial Online]2019 [cited 2020 Apr 12]: 4:22-7. (Available from http://www.archms.org/text.asp?2019/4/1/22/269236)
24. MOH, Benue State, Nigeria. Annual *Tuberculosis Report*. 2015