
Barriers to Uptake of Drug Resistant Tuberculosis (DRTB) services and Care in Nigeria: Lessons Learnt from Implementation of Community Management of DR TB Patients

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Abstract

Objectives: This article examines the barriers to uptake of DRTB baseline and follow-up tests for DRTB patients in Nigeria.

Methodology: The study involved all the Local Government Areas (LGAs) in 35 Nigerian states and the FCT where community DRTB intervention is implemented. Purposeful sampling technique was employed and included all DRTB patients currently on treatment. Data collection was done using a structured questionnaire. The data analysis was done using SPSS version 22 for running the univariate analysis and reported in frequencies and percentages. Data were summarized using descriptive statistics, frequency distribution tables and presented in tables.

Results: The finding showed that 55.9% of the patients had difficulty accessing the baseline investigation tests. 49% reported lack of transport fare while 47.4% reported that the lab facility where the baseline was conducted was too far from their homes. About 58.8% of the respondents

stayed up to 1-2 weeks after diagnosis before having the baseline investigation tests done and 61.4% of the patients did not always have money to go for follow-up tests

Conclusion: This study showed gap between diagnosis and enrolment on treatment of patient with drug resistant Tuberculosis in Nigeria due to challenges in accessing pre-requisite baseline investigation tests. This has potential to result to loss-to-follow-up. There is need for decentralization to facilities close to where patients reside and more social support to the patients to ensure that all diagnosed patients are enrolled on treatment.

Keywords: Baseline investigation, follow-up test, Community DRTB intervention.

Tuberculosis (TB) is a major public health challenge globally. There was an estimated 1.3 million global TB deaths in 2020 (up from 1.2 million in 2019) and an additional 214 000 among HIV-positive people (up from 209 000 in 2019) [1]. Nigeria together with other seven countries contribute to two thirds of the global TB burden. Nigeria with an estimated 440,000 TB cases annually has the 6th largest burden of TB globally and the highest in Africa. The TB incidence rate in the country is 219/100, 000. Childhood TB case notification in the country is only at 6% in 2021[2]. TB burden is exacerbated by multi drug resistant TB and high burden of HIV. Although Nigeria made significant effort to notify 2007,975 TB cases in 2021, only 14%(2975) of the estimated 21,000 DRTB cases and 55% of the Global Fund supported target of 5,400 for 2021 were diagnosed. This is an improvement over 2019 and 2020 data of 2,384 and 2,061 DRTB diagnosed respectively. This is further compounded by the observed trend of consistent gap between diagnosed and enrolled DRTB on treatment in Nigeria from 2010. Out of 2,275 DRTB that were diagnosed in 2018, only 1,895 were enrolled on treatment. In 2019, 2,384 were diagnosed and 1,975 were enrolled, 2061 were diagnosed in 2020 and 1,472 enrolled while in 2021, 2,975 were diagnosed and only 2,197 were enrolled on treatment [2].

The laboratory diagnosis of DRTB is done by genotypic and phenotypic drug susceptibility tests (gDST/p/DST). The primary test is the Xpert MTB/RIF test. A positive clinical specimen tested by the Xpert MTB/RIF showing resistance to rifampicin will further be subjected to Line Probe Assay(first –and second-line LPA and culture/DST) according to national guideline [3]. Other baseline tests are done, the results are reviewed by a physician who recommends the regimen to be used by the patient. Patient is informed to come for enrollment. Once a patient is enrolled, he/she is commenced on treatment and managed as DRTB in consultation with the State DRTB team.

Pre-requisite for enrolment of patients on treatment is the conduct of baseline investigations which include chest X-ray, Electrolyte/Urea/Creatinine, Liver enzyme, Serum Amylase, ECG, Fasting blood sugar, full blood count among others. These tests are necessary to be conducted pre-treatment and after commencement of patients on treatment(follow-up tests) consecutively for at least 6 months to enable establishment of patient's stability and any likelihood to develop any serious complication based on the Bed aquiline therapy which is administered for the first 6 months of treatment.

Nigeria adopted the WHO all oral shorter regimen of DRTB treatment in 2018 of 4-6 months Bedaquiline-Clofazimine-Protionamide-Pyrazinamide-Ethambutol-Isoniazid/5 months Moxifloxacin-Clofazimine-Ethambutol-Pyrazinamide(4-6 Bdq -Mfx- Cfz-Hh-Pto-E-Z/ 5Mfx-Cfz-E-Z) but commenced implementation in 2020. Long Oral MDR-TB regimen is provided for patients who do not fulfil the criteria for the oral shorter regimen due to the following: Pre XDR-TB that is resistant to fluoroquinolone, adverse drug reactions. Regimen used is 6 months Bedaquiline-Moxifloxacin-Clofazamine-Linezolid/12 months Moxifloxacin-Clofazamine-Linezolid(Bdq-Mfx*-Cfz -Lzd/ 2Mfx-Cfz-Lzd). Individualized Regimen is used for patients who are Pre XDR-TB resistant to injectables only and those who are XDR-TB. Regimen used is 6 months Bedaquiline-Clofazimine-Linezolid-Cycloserine/12months Clofazimine-Linezolid-Cycloserine (Bdq-Cfz-Lzd-Cs/ 12Cfz-Lzd-Cs)[3]. The baseline investigation tests, the follow-up tests and the treatment are provided free of charge to the patients with support from the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM).

Currently, three models of care for drug resistant tuberculosis patients is being operated in the country. They are the community-based(ambulatory care), the hospital- based and the mixed model which is a combination of both hospital-based and the ambulatory care at different points of patient's treatment and commonly starts with hospital- based and then ambulatory. The community-based management is done outside the DRTB dedicated facilities. Both the intensive and the continuation phases of the treatment are in the community and are rendered by multi-disciplinary team. Criteria for community based care include: patient's preference for treatment at home, availability of health care worker to monitor daily Directly Observed Treatment(DOT), patient that does not fall under the criteria for hospital-based i.e patient is not critically ill or have other co-morbid conditions that require hospitalization.

The Association for Reproductive and Family Health (ARFH), a non-profit organization, in Nigeria, is currently implementing the Community management of DRTB patients in 35 states out of the 36 states in Nigeria plus the Federal Capital Territory (FCT) with support from the Global Fund through the National Tuberculosis and Leprosy Control Program(NTBLCP). Patients managed in the community are given their drugs under the supervision of a treatment supporter (TS) for daily DOTS and linked to a DOTS officer. He/she visits the General Out-Patient Department (GOPD) monthly accompanied by the TS for assessment by a physician and also for any observed adverse drug reaction. Other care provided at home for patients include counselling on adherence to drug regimen, infection control, nutrition counselling and other psychosocial support. Some advantages have been argued in favour of community-based management of DRTB such as: it is cheaper than institutionalized treatment; it may decrease nosocomial spread of the disease; achieve results comparable with hospitalization and prevents patients' boredom accompanying hospitalization. However, the challenges include transportation required by the patient to access the baseline investigation tests, to the health facility for drug refill and follow up tests as well as DOT officer traveling to the patient's home to provide support. Despite the fact that the baseline, follow-up tests and DRTB treatment are free in the country, the gap between diagnosis and enrolment continues to persist. Three known health care access barriers have been well documented including financial, cognitive and structural in

studies in other countries [4]. These barriers result in many consequences such as late presentation, decreased prevention and decreased care, which can lead to health outcome disparities. Not enough is known on the barriers to uptake of DRTB services in Nigeria, hence the need for the current study.

Objective of the study: To identify the barriers to uptake of baseline and follow-up tests for DRTB patients in Nigeria.

Methods

Study Design: The study was a quantitative study to ascertain the barriers to DRTB services especially the baseline investigation tests which was pre-requisite to enrollment on treatment. The study adopted the purposeful sampling technique. All DRTB patients currently on treatment as at May, 2022 of questionnaire administration were included in the study. This was to get a broad information on the challenges that constitute barrier to accessing DRTB treatment and services

Study area: This involved all the Local Government Areas(LGAs} in 35 Nigerian states and the FCT where community DRTB intervention is implemented.

The Intervention:

The Association for Reproductive and Family Health (ARFH) with support from the Global Fund through the National Tuberculosis and Leprosy Control program (NTBLCP) commenced implementation of the Community Programmatic Management of Drug Resistant TB (CPMDT) in 2019 and scale up of prevention and control in 35 states and the Federal Capital Territory (FCT) in line with the ambulatory care and community DR-TB agenda of the NTBLCP. The goal of the Community DR-TB Care is to ensure prompt access to high quality, patient-centered DR-TB diagnosis, treatment and follow-up services thus contributing to improved treatment outcomes and reduction in DR-TB transmission in Nigeria. ARFH has over the years mentored several Community Based Organizations (CBOs) in the implementation of cost effective and sustainable community-driven model/health interventions in Reproductive health, Maternal and Child health, Family Planning, Adolescent health, Active TB Case Finding (ACF) and other health programs. A training workshop was conducted for the selected Community Based organizations (CBOs) and Community TB Workers (CTWs) by the Local Government TB Supervisors (LGTBLS) using the National training module on community management of DRTB to acquaint them on basic facts about community management of DRTB and other TB program related issues that would enable them deliver on the Service Delivery Areas. It also guided the CBOs and the CTWs on the operational issues of the intervention.

Treatment Supporters (TS) were identified and trained for daily monitoring, care and support of patients in the community and work in conjunction with the assigned Community-Based Organization (CBO) and Local Government TB Supervisors (LGTBLS)/DOT Providers (General Health Workers (GHW)) for each DR-TB patient receiving treatment in the community. The TS is usually a family member of the DRTB patient or a dedicated Community TB Worker (CTW). The CBOs and TSs keep track of and ensure patients compliance and adherence to drugs intake,

ensure that patients follow up investigation tests and sputum culture are carried out regularly based on the Standard Operational Procedure(SOP) for patients monitoring. The CBOs identify and address socioeconomic problems among DR-TB patients receiving treatment in the community and notify the DOT providers and the LGTBLS of any adverse drug reaction who will eventually notify the Physicians for review. The CBOs conduct routine home visit and provide counselling on adherence, infection control, nutrition and carry out contact screening and tracing. ARFH provides other patient support through the CBOs.

Once a patient is diagnosed, baseline investigation tests are carried out for him/her before enrolment on treatment. Subsequent monthly follow-up tests are done to track the progress and the health status of such a patient until treatment completion. Critical observation in the grant implementation is the persistent gap between diagnosis and enrolment and the increasing rate of pre-enrolment loss to- follow-up. Similarly the centralization of facilities for conducting baseline and follow-up investigations/tests for the DRTB patients has been identified by the implementation experience as a barrier to access these services. The tests are only carried out by facilities located in the state capital cities. These cities are very far from patients especially coming from rural Local Government Areas. A root- cause analysis is therefore very pertinent to make programmatic decisions to close the gap.

Sample Procedure: Respondents were recruited from 35 states and the FCT voluntarily to participate in the survey. A total of 280 respondents participated in the survey. However, 272 responses were analyzed after data cleaning due to grossly incomplete data. The suitability of the choice of methodology was based on the naturalistic and descriptive nature of quantitative research which is helpful to provide the information that addresses the specific objectives of the study [5].

Data Collection Instrument: A structured questionnaire was designed to collect information for this survey. The items include questions on: access to healthcare, challenges encountered by patients in accessing baseline investigation, location of facilities where baseline is conducted.

Data Collection Procedure: Data collection procedure was through administration of structured questionnaire. Informed consent was received from each patient by explaining that the information collected will be kept confidential and that participation is voluntary.

Data Analysis: The data analysis was done using SPSS. Data were summarized using descriptive statistics, frequency distribution tables and presented in tables.

Results

The finding showed that 55.9% of the patients had difficulty or challenge in accessing the baseline investigation. 49.% reported that this difficulty was due to lack of transport fare while 47.4% reported that the lab facility where the baseline was conducted was too far from their homes. Over 57% (57.7%) needed to board a vehicle to get to the laboratory hence could not do the baseline investigation immediately after diagnosis. About 58.8% of the respondents stayed up

to 1-2 weeks before having the baseline investigation tests done and 61.4% of the patients did not have money always to go for the baseline and follow-up tests. A total of 280 respondents participated in the survey and structured questionnaire was administered. However, 272 responses were analyzed after data cleaning due to grossly incomplete data. The data analysis was done using SPSS. Data were summarized using descriptive statistics, frequency distribution tables and presented in tables.

Table 1 shows the demographic profile of the patients. The data shows more female (61.4%) than male (38.6%). About 37% of the patients have secondary (high school) education. Only 12.1% have tertiary education. Employment status shows that 77.2% of the patients are unemployed and 46.3% are house-heads.

Table 1: Demographic Characteristics

Variables	Frequency	Percent (%)
Sex		
Male	105	38.6
Female	167	61.4
Age		
0 - 14 years – Children	2	0.7
15 year and above – Adult	270	99.3
Marital Status		
Single	92	33.8
Married	158	58.1
Separated, divorced, widowed	11	4.1
Educational Status		
None	53	19.5
Primary	29	10.7
Secondary	101	37.1
Tertiary	33	12.1
No Response	56	20.6
Employment Status		
Employed	62	22.8
Not employed	210	77.2
Head of household		
Yes	126	46.3
No	146	53.7

Table 2 shows the trend of diagnosis and enrolment of DRTB in Nigeria in the last twelve years. There has been consistent low DRTB case notification as per target and gap in the number of diagnosed and enrolment. Although, a slight increase is observed on yearly basis except in 2020 for diagnosis, same trend does not occur with enrolment on treatment. There has been an observed inconsistency between diagnosis and enrolment. At the end of 2021, only 74% of the diagnosed DRTB patients were enrolled on treatment.

Table 2: Trend Of Diagnosis And Enrollment Of DR-TB Case In Nigeria

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
TARGET	3618	3722	3914	4016	3300	4700	5200	5200	5400	5400	5400	5400
Diagnosed	28	38	185	665	781	1279	1686	2286	2275	2384	2061	2975
Enrolled	20	28	185	345	412	656	1251	1786	1895	1975	1472	2197
% Diagnosed	1%	1%	5%	17%	24%	27%	32%	44%	42%	44%	38%	55%
% Enrolled	71%	74%	100%	52%	53%	51%	74%	78%	83%	83%	71%	74%

Table 3 shows that all the patients experienced one symptom or the other. However, 78.7% reported cough of more than 2 weeks. About 55% of the patients experienced severe symptoms. Also, 74.6% reported that their symptoms lasted two weeks and above. 45.6% of the patients reported visiting a hospital, 22% visited a patent medicine vendor. However, about 21% did nothing.

Table 3: Symptoms experienced by patients

Symptoms (Variables)	Frequency	Percent (%)
Symptom (s) experienced (multiple responses*)		
Cough of more than 2 weeks	214	78.7
Night sweat	5	1.8
Loss of weight	13	4.8
Loss of Appetite	40	14.7
Severity of symptoms		
Not severe	37	13.6
Severe	62	22.8
Very severe	149	54.8
No response	24	8.8
Duration of symptoms		
Few days	10	3.7
1 Week	29	10.7
2 Weeks and above	203	74.6
I don't know	8	2.9
No response	22	8.1
Response to symptoms		
Did nothing	58	21.3
Visited hospital	124	45.6
Visited pharmacy/Patent medicine vendor	60	22.1
Used herbs/unorthodox medicine	8	2.9
No response	22	8.1

In table 4, patients reported having challenges in accessing the baseline investigation tests. These ranges from lack of transport fare (49.3%) to proximity of the facility where the tests are done being too far(47.4%). About 58% of the patients need to board a vehicle to enable them access the baseline tests because of the proximity of the distance. About 28% need a bike to be able to access the baseline tests while only 5.9% have a walking distance to the facilities where the baseline tests are carried out. It took about 1-2 weeks from time of diagnosis for 58.8% of the patients to have baseline investigation done. 64.1% of the patient did not have money all the time to go for tests while 17.6% of the patients did not have money at all to go for tests. As reported by participants, it costs not less than N1,850.47(\$4.45) to get to the facility where baseline/follow-up tests are conducted using a motorbike and N1,932.77(\$4.65) using a vehicle.

Table 4: Challenges encountered by patients in accessing baseline investigation.

Variables	Frequency	Percent (%)
Had difficulty/challenge in accessing baseline investigation?		
Yes	152	55.9
No	120	44.1
Challenges encountered (N=152)		
Lack of transport fare	75	49.3
Laboratory/facility too far from home	72	47.4
No response	5	3.3
Distance of health facility/Laboratory from your house		
Within walking distance (less than 2kilometers)	16	5.9
More than 2 kilometer (using a motor Bike)	76	27.9
More than 10-20 Kilometer (By a vehicle)	157	57.7
No response	23	8.5
Duration of time taken from diagnosis to doing baseline investigation		
1-2 weeks	160	58.8
3 weeks - 1 month	42	15.4
Within 1-2 months	22	8.1
Above 2 months	2	0.7
No response	46	16.9
Availability of money to go for these test		
Always	30	11.0
Not all times	167	61.4
I don't have money at all to go	48	17.6
No response	27	9.9

Table 5 shows where the patients went for the baseline investigations and follow-up tests. 82.4% and 83.5% went to the Government hospitals for baseline and follow-up tests respectively. Only 0.4% and 1.5% of the patients went for baseline and follow-up tests respectively in a private lab.

Table 5: Where investigation is done

Variables	Frequency	Percent (%)
Where were you asked to do the baseline investigation tests?		
Government Hospital	224	82.4
Government Lab	10	3.7
Private Hospital	1	0.4
Private Lab	7	2.6
No response	30	11
Where were you asked to do the follow-up tests?		
Government Hospital	227	83.5
Government Lab	10	3.7
Private Hospital	4	1.5
Private Lab	2	0.7
No Response	29	10.7

In table 6, 94.9% of the patients were aware of the baseline tests and 93.4% of the patients knew the implication of not doing the test. 90% of the patients thought they should do the tests. 36% of the patients thought that doing the tests will help them know if the medication for treatment is working, 33.5% thought will be cured if they do the tests while 18.8% thought the tests will treat their symptoms.

Table 6: Knowledge about the investigations, benefits and implications

Variables	Frequency	Percent (%)
Aware of the baseline test?		
Yes	257	94.5
No	15	5.5
Aware of the follow-up test?		
Yes	258	94.9
No	14	5.1
Aware of implication of not doing the necessary tests?		
Yes	254	93.4
No	18	6.6
Do you think you must do the test ?		
Yes	245	90.1
No	27	9.9
What will make you not do the test ?		
No reason	99	36.4
Lack of transport fare	112	41.2
Lab too far from my house	7	2.6
Misconceptions	1	0.4
No response	53	19.5
What do you think is the benefit of doing the test?		
To know if the medication is working	98	36.0
To get cured	91	33.5
To treat the symptoms	51	18.8
No response	32	11.2

Discussion

The inability of some diagnosed DRTB patients to access pre-requisite baseline tests thereby creating a gap between diagnosis and enrolment on treatment has consistently been a concern in Nigeria. Hence, strategies to address this and close the gap becomes very important. The implementation of the community management of DRTB patients by Association for Reproductive and Family Health commenced in July, 2019. Observation of trends of gap between diagnosis and enrolment in Nigeria from 2010 as shown in the NTBLCP statistical report in table 2 remains consistent, the current pre-enrolment loss to follow-up and the inability of the patients to commence treatment on time and consistently attend the Out-patient Department (OPD) review by the doctors to monitor their health status necessitated the need to carry out this study. Only 74% of diagnosed DRTB patients were enrolled on treatment in 2021. The major challenges in accessing the baseline tests as reported by patients are lack of transport fare (49.3%) and the far distance of the facility where the tests are done (47.4%). These tests are pre-requisite to enrolment on treatment.

In studies in other countries, three known health care access barriers have been well documented including financial, cognitive and structural. These barriers result in many consequences such as

late presentation, decreased prevention and decreased care, which can lead to health outcome disparities. In a study in rural Australia, several structural barriers to health care access such as service availability were identified, and geography was intensified with financial barriers (affordability) [4]. In the same study, travelling to facilities kept the migrants from working that day, which was problematic. Distance and transportation were barriers to access to public health services in particular. Studies in India have concluded that the socioeconomic status of a person strongly affects their access to health care [6-7]. In the framework of this study, income, literacy and skills are examples of socioeconomic factors that can either hinder or advance a person's health care access. This is also a gendered phenomenon, as income level and literacy rates, for example, are lower among women [8-9]

The cost of health care has been documented as a critical barrier in Carrillo et al (2011) Health Care Access Barrier (HCAB) model. As could be anticipated, the price of health care as a barrier was related to the income of a person, as those with lower income saw it as a stronger barrier. Cost as a barrier was also indirectly linked to the level of informality of employment and gender – those in more informal employment settings, as well as all women, earned less and, therefore, the price of health services makes up a more significant portion of their income.

Another critical barrier in the HCAB model is the structural barrier and associated with the distance to the health facility and the working hours of the health facilities [10]. Poverty has been identified as a critical component of low access across low-income countries, highlighting the significance of the financial barrier. [11-12]. These studies also document how low income hinders access to health care.

This study corroborates findings from other studies on barriers to Tuberculosis care and services. In a study conducted by Olanrewaju et al (2017) in Oyo State, South West Nigeria, it was documented that distance from homes to DOTS sites and cost of transportation were reported by patients as responsible for missing their treatments [14]. Similarly in another study by Pradipta et al (2020), despite the fact that TB treatment is free, some participants mentioned that some costs such as transportation, private services and additional services in public health facilities were a concern. This may lead patients with poor living condition having lost to follow-up treatment due to the cost burden[15]. Another study by Chimeh et al (2020) reported that economic burden has impact in non-adherence to medication[16] and the necessity to use personalized approaches to improve medication adherence considering multi-faced adherence factors in tuberculosis patients was pertinent [17).

In this study, employment status shows that 77.2% of the patients are unemployed. Unemployment could be the factor responsible for the patients inability to pay for the transport fare to access the baseline investigations. Unemployment has also been identified as a challenge by TB patients in a study by Olanrewaju et al (2017). Loss of employment posed major economic challenges to patients as the source of income is lost, which besides the direct effect it can have on the patient's capacity to cater for the cost in TB care, families wellbeing can be strained particularly if the patient were to be the breadwinner of the home.

The need for decentralization of the services especially those that are pre-requisites for enrolment on treatment is currently being discussed with the NTBLCP. Currently, all baseline and follow-up investigations are done in the state capitals and cities far from the locations of patients. 47.4% of the patients reported that the laboratories where the baseline and follow-up investigations are done are too far from their homes, 49.3% lack transport fare to get to those facilities and 57.7% need to board a vehicle to those facilities. As reported by the patients in this study, the average cost for a patient to get to the nearest facility for baseline and follow-up investigation tests using a motorbike and vehicle respectively is N1,850.47(\$4.45) and 1,932.77(\$4.65). Over sixty percent(61.4%) do not have money all the time to go for the follow-up tests. Only 5.9% patients have their homes within a walking distance. Based on the most recent official survey data from the Nigerian National Bureau of Statistics, 39.1 percent of Nigerians lived below the international poverty line of \$1.90 per person per day in 2018/19. Yet a further 31.9 percent of Nigerians had consumption levels between \$1.90 and \$3.20 per person per day, making them vulnerable to falling into extreme poverty. Simulation results suggest that the dual COVID-19 and oil price crisis alone could push around 10 million additional Nigerians into poverty by 2022, over and above the slower rise in the number of poor people predicted before the pandemic struck. Coupled with high inflation for key food items, this has led to increasing food insecurity, especially for poor households [18]

Despite the availability of free drug-resistant tuberculosis (DR-TB) care in Nigeria supported by donors such as the Global Fund, patients continue to bear out-of pocket costs. A catastrophic cost survey conducted by the Association for Reproductive and Family Health (ARFH) in collaboration with National Tuberculosis and Leprosy Control Program and WHO in 2017, showed 71% of households that participated in the survey experienced catastrophic cost due to TB, 69% among DS TB patients and 90% among DR TB patients[19]. These are out-of pocket cost that are not covered in the available supports and free services from the donor such as the transport cost to access TB treatment as shown in this study. This corroborates the findings of study of Ivan, S.Pradiptal etal (2021) in Indonesia which showed that although the government announced a free TB care programme, some costs were still covered by the patients themselves. Some participants in that study mentioned that some costs such as transportation, private services and additional services in public health facilities, had to be covered by themselves.

As reported, 82.4% and 83.5% went to the Government hospitals for baseline and follow-up tests respectively. TB services in the government (public) hospitals in Nigeria is free. These services are funded by the Global Fund up to treatment completion. This is in contrast to the study in Indonesia by Chimeh etal (2020) which reported that TB patients did not want to go to the public health services due to their perception about the quality of services and medicines. Another finding showed that some patients were not aware that the public health service had a free TB program (Ivan, S Pradiptal etal 2021). This may lead patients with poor living condition having lost to follow-up treatment due to the cost burden because patients must spend their own money to receive TB care in private health services. Although 94.9% of patients were aware of the baseline tests as shown in table 6 and 93.4% know the implication of not doing the test,

however, lack of transport fare to access the test was a great barrier to 41.2%.

Limitation: Only 272 of the total 280 respondents response that participated in the survey were analyzed after data cleaning due to grossly incomplete data

Conclusion: This study showed barriers in accessing the baseline investigation and follow-up tests for Drug Resistant TB patients in Nigeria which are prerequisite to enrolment on treatment. The challenges range from lack of transport fare to proximity of facilities where these tests are done. Consistent gap between diagnosis of patient with drug resistant Tuberculosis and enrolment on treatment in Nigeria has been observed. Only 74% of the diagnosed patients were enrolled on treatment at the end of 2021. There is need for the national and state Tuberculosis Control programs to decentralize the facilities to include those close to where patients reside. Also, more social support to the patients such as transport support is needed by programs in Nigeria to ensure that all diagnosed patients are enrolled on treatment.

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List of Abbreviations:

ACF -	Active TB Case Finding
Bdq -	Bedaquiline
AIDS -	Acquired Immunodeficiency Syndrome
ARFH -	Association for Reproductive and Family Health
CBOs -	Community Based Organizations
Cfz -	Clofazimine
CPMDT -	Community Programmatic Management of Drug- Resistant Tuberculosis
Cs -	Cycloserine
CTWs -	Community TB Workers
DOTS -	Directly Observed Treatment Shortcourse
DR TB -	Drug Resistant Tuberculosis
ECG -	Electrocardiogram
FCT -	Federal Capital Territory
GFATM -	Global Fund to fight AIDS, Tuberculosis and Malaria.
GHW -	General Health Workers
GOPD -	General Out-Patient Department
HIV -	Human Immunodeficiency Virus
LGAs -	Local Government Areas
LGTBLS-	Local Government TB Supervisors
Lzd -	Linezolid
Mfx -	Moxifloxacin
NTBLCP -	National Tuberculosis Leprosy & Buruli Ulcer Control Program
PCS -	Patient Cost Survey
Pto -	Protionamide
Qrt -	Quarter
SOP -	Standard Operational Procedure
TB -	Tuberculosis
WHO -	World Health Organization