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Determinants of Choice of Treatment by Tuberculosis Patients in Nigeria

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Abstract

Tuberculosis constitutes a major health challenge for Nigerians. Also, it has socio-economic implications as it mainly affects the productive segment of the population which is the people within the age group of 18-35. The choice of service providers by TB patients determine how soon the spate of the disease will be curbed in Nigeria. The study investigated the predictors of the choice of service providers by TB patients drawing upon data from the most recent Demographic and Health Survey of Nigeria. The study utilized a polychotomous logistic regression equation. Essentially, the study revealed that education, age, and regions are critical determinants of a TB patient's choice of healthcare providers. More educated people were apt to seeking professional treatment. Again, the study revealed that more patients utilize public hospitals than any other health service providers. A comparison of TB prevalence rates among the six geo-political zones showed that North-West is the worst hit. The study recommended among other things for the creation of awareness on the best TB healthcare provider, improvement of private hospitals and increased budgetary allocations to the Northern region, as a way of curbing the high prevalence of the disease in the region.

Keywords: Determinants, Choice, Treatment, Tuberculosis, Patient, Nigeria

JEL Classification: L120, L121, L123

Paper Classification: Research Paper

Introduction

Tuberculosis constitutes one of the public health challenges to Nigeria. The World Health Organization (WHO, 2010) listed twenty-three diseases TB inclusive which causes 97,669 deaths and account for 5.72% of death in Nigeria every year. TB is a highly contagious disease that can break the immunity of the body. As one of the opportunistic infections of HIV/AIDs, it can accelerate the loss of vitality, weakens the immune system and consequently hastens morbidity and mortality (Oluwadare & Ibirinde, 2010). It is an unprecedented global infectious disease that accounts for 1.5 million deaths annually. Using the scale of TB burden, Nigeria was ranked the

first in African and seventh in the world among the 30 countries. Nigeria's government has made a giant stride move to curtail TB. To this extent, the TB program was launched in 1991 with the initiation of the directly observed treatment short course (DOTs). In 2004, the National Health Policy for the control of TB and Leprosy was established and in 2006, the National TB program launched a 5-year strategic plan for TB control, to reduce the burden, socio-economic impact and transmission of TB in Nigeria (Oluwadare & Ibirinde, 2010).

Though significant progress has been made in the fight to curb TB, yet it remains a life-threatening disease, worsened by several challenges which include Multi-drug Resistant TB (MDR-TB), co-infection of TB and HIV and TB among children (Alphonsus & Abebe, 2014). According to the WHO (2018) estimates, the risk of contracting TB is between 16-27 times higher for HIV than non-HIV patients. TB and HIV are called dangerous co-epidemics in most regions of the world. TB constitutes socio-economic and development challenges in Nigeria. Three diseases which are TB, HIV/AIDS and Malaria are called the diseases of poverty. Many persons suffering from TB are poor who are marginalized and do not have access to health care services. Most TB patients do not receive treatment due to either discrimination or stigmatization.

Nigeria has a mixed healthcare system in which both orthodox and traditional care providers operate side-by-side. Healthcare consumers are, therefore, faced with various choices to use healthcare services. In literature, several factors have been noted as determinants of the choice of healthcare providers. Some of the listed factors were educational status, age, sex, income level, etc. A TB patient's choice of healthcare provider ranges among public hospitals, private hospitals, Pharmacy, Chemist store, and informal healthcare providers. Oruboloye and Ajakaiye (2002) hints that less than 40% of Nigerians patronize public health facilities, this, according to them, accounts for the untimely detection of TB in specialist hospitals. Oluwadare and Ibirinde (2010) added that TB specialist hospitals are underutilized by the number of cases they attend to. Consequently, treatment of TB lacks timeliness, completeness, and quality. It was also reported that treatment coverage and defaulter rates were both high among the study group. The authors further reported that over 50% of the respondents in their study were engaged in either self-medication or traditional therapy. In Nigeria, a larger proportion of those affected with TB falls within the economically viable age bracket of 18-35 (Federal Government of Nigeria, 2012). Thus, the choice of healthcare provider chosen by the patient is essential for healthcare policymaking because to reduce the burden of TB there is a need to encourage more patients to utilize evidence-based care. Nevertheless, the taste and preference of the patient play a key role in his/her choice of healthcare providers. Healthcare providers are divided into formal and informal. The informal constitutes traditional healthcare providers, while formal consists of public hospitals, private hospitals, Pharmacies, and Chemists.

Determinants of choice of health service providers have been the subject matter of many studies in Nigeria (Ichoku & Leibburandt; 2003; Uzochukwu & Onwujekwe, 2004; Amaghionyeodiwe, 2008; Tanimola & Owoyemi, 2009; Oluwadare & Ibirinde, 2010; Awoyemi, Obayelu & Opaluwa, 2011; Uchendu, Ilesanmi & Outmode, 2013; Abiodun & OluAbiodun ,2014; Abodunrin, Bamidele, Olugbenga-Bello & Parakoyi et al;2014; Joseph, Muhammed, Rajis, Ibinidu, Joseph & Kadiri,2017) . However, a good number of studies only examined healthcare utilization in general without focusing on any specific disease conditions. Uzochukwu and Onwujekwe (2004) investigated sources of treatment of malaria for various socioeconomic groups in South-Eastern Nigeria. Oluwadare and Ibirinde (2010) investigated the health-seeking behavior of TB patients and the choice of treatment by HIV patients in Ekiti state. However, the scope of the study was narrow limiting the extent to which findings from the study can be generalized. Also, the study was a mere descriptive study. The present study, in addition to drawing a large

sample size from the most recent Demographic and Health Survey utilized an analytical technique to investigate the predictors of choice of health service providers by TB patients in Nigeria. Knowledge of determinants of choice of healthcare providers is helpful for policy development; hence this present study will provide information that will be useful in identifying innovative models that will help TB patients to better use care.

Review of Related Literature

An extensive review of the literature reveals, several factors can influence the choice of health service providers by patients. These factors operate at the individual, household, community and health service levels. At the individual level, age, marital status, employment status, income, affordability of health care and education were reported as important factors that may influence where the sick go for treatment. Education attainment has been reported as one of the factors that can shape people's views of life and so influence their health-seeking behavior (Syed, Shamsuddin & Azher,2005; Amaghionyeodiwe, 2008). Education endows one with literacy skills which enable the individual to process a wide range of health information and stimulates cognitive development (Idowu, Osinaike & Ajayi, 2011). The knowledge embedded in the school curriculum enables an individual to make informed health decisions that can shape their interactions with the surrounding world. As an important agent of socialization, the crucial role of literacy is manifested in shaping opinions and values which help one to break loose from fatalism. According to Idowu (2013), education imparts one with new ideas and hence yields alternative perceptions of life views which enable one to radically shift from old traditions that discourage the use of modern health services. A study in Bangladesh reported that 60% of people without formal education received healthcare services from modern providers,32% of the educated received their treatment from informal providers and households headed by less educated people, who are engaged in low-status occupation patronized traditional service providers (Syed et al; 2005). The income of the individual and household's wealth is another significant predictor of choice of health service providers. Income is particularly important in the era of user fees. Households who are not under any form of health insurance coverage will have to pay for health from out-of-pocket and several households who cannot pay directly for health services will resort to either self-medication or the use of traditional medicine. A higher level of family wealth positively influences health service utilization (Fosu, 1994). A household with a higher level of wealth will most likely utilize evidence-based health services given that they have the resources to pay for services. Studies for both Nigeria and Bangladesh reported wealth as one of the strongest predictors of the source of care utilization (Uzochukwu & Onwujekwe, 2004; Syed et al; 2005). Age also influences healthcare utilization. It is proposed that households headed by older people are more likely to use healthcare services. Age interacts with years of schooling, income, exposure and health information to positively influence healthcare behavior. Gender relationship is also a significant predictor of households' health-seeking behavior (Oluwadare & Ibirinde, 2010). Households, where women are subjugated and subjected to men's imperative, may likely under consume healthcare services. In patriarchal societies, the men are in control of resources and women are less empowered hence placing impediments on households' care utilization (Yaya et al; 2019). Distance to health facilities has been noted as a significant determinant of the choice of service providers. Long-distance with long traveling time and high costs of transport may encourage self-medication or the use of traditional healers (Awoyemi, Obayelu & Opaluwa, 2011; Abiodun & OluAbiodun, 2014). An increase in distance implies that the individual will have to incur additional costs in traveling to the place of medication. A study conducted in Kenya reported that distance negatively influenced the utilization of care from both private and public hospitals (Murilhi, 2003). The authors remarked that distance could create a disincentive effect on care

utilization by adding extra burden on the monetary cost for treatment. However, they argued that the effect of distance will be higher for public health facilities than private health facilities. Users of private health facilities have implicitly decided to make extra cost payment hence increase in distance will not affect their probability choice for private health facilities. On the contrary, health services in public facilities are often subsidized or, in some cases, rendered free of charge. Users of such services are not ready to make any extra payment in respect of care so that an increase in distance will affect the probability of choice for public health facilities (Murilhi, 2003). Both perceptions of quality of care and actual quality of care influence care utilization (Thaddeus & Maine, 1994). While the perception of the quality of care may delay the decision to use care actual quality influences the utilization of care. There are several reports that improvement in the quality of care will increase the number of visits to health facilities. Quality of health care is measured through various dimensions which include the availability of medical equipment, availability of drugs, competent medical personnel, the attitude of care providers and the general outlook of the facilities in terms of buildings, pharmacy-dispensing units, and laboratory. A-Nigerian study reported that treatment effectiveness, quality of service, cost of Medicare, providers' attitudes, professional competence, waiting time in the health facility and distance to the health center in this order influenced the determinants of the choice of health care providers(Joseph et al;2017). Liu, King, Yuan, and Van (2018) in a systematic review reported over crowdedness in higher levels of care and underutilization of lower levels of care due to poor quality of care at lower levels. Costs of treatment and user fees are two other factors that can influence the choice of healthcare providers. Concerning the costs of treatment, there have been conflicting reports (Murilhi, 2003). A-Nigerian study reported the costs of treatment as the most significant determinants of care utilization (Amaghionyeodiwe, 2008). There are indications that the introduction of user fees in public hospitals has resulted in a shift in the demand for healthcare from public health facilities in favour of other care providers which include private hospitals, medicine vendors and traditional healers (Uzochukwu & Onwujekwe, 2004). The barrage of studies that investigated the impact of cost recovery in the form of user fees on access to care gave a consensus reports that following the scheme there was a reduction in access to care from public hospitals.

Materials and Method

Data Source

The data set used for this study was obtained from the National Demographic and Health Survey (NDHS, 2013). The choice of this source is the availability of all the data pertinent to the study and, the NDHS (2013) is the most recent Nigerian health survey.

Statistical Analysis

In a multinomial logit model (MNL), healthcare consumers are assumed to know the characteristics of all alternative health service providers and their choice is premised on the objective of maximizing utility. The choice made by patients is determined by the differences in utility across the various alternative health service providers, rather than levels of utility from each provider. Thus, decision-making involves a comparison of the utility from alternative service providers. A MNL model is specified below:

$(zi = k) = e\beta ke i \sum (e\beta ke i)\ k\ k=1\ k= 1\ldots.. j$---------- (1)

Hence, $\sum jk = 1zi = 1$, a restriction is introduced that $\beta 1 = 0$ to ensure that the model is identified. While in a conditional logit, values of Xs are used as deviations from their means in

multinomial logit deviations, coefficients are used to compute marginal benefits expected as alternative sources of treatment. The health service provider that yields the highest benefit is preferred and the utility comparison is expressed as:

$eij = (eij > eji)$ for all $t \neq t$----------(2)

Where, *eji* is the perceived health benefit which individual i will derive from patronizing health service provider *j*, while *ei*t is the health benefit for patronizing health service provider t, *e*ik are the health benefits that individual i will derive from utilizing care from health service provider k (k=1…..k). The random utility model associated with a visit to a health provider under the above specification and which is estimated as

$\Theta ik = V(Xi, Zj) + e.k$ ----------(3)

Where, Xs represent demographic characteristics such as education, age, marital status, religion and Zj other factors such as health insurance type and region.

Dependent Variable

The dependent variable is the choice of health service providers by TB patients. Here, five health service providers are considered. They are Public hospitals, Private hospitals, Pharmacy, Chemists and others (including traditional care providers). The baseline outcome is a Public hospital.

Independent Variable

Five independent variables are considered: Age, Education, Marital status, Region and Insurance type. Age is a continuous variable and is based on the current year of the respondents. Education is categorical; hence no formal education, primary education, secondary education, and post-secondary education are considered. The reference category is no formal education. Marital status is also categorical hence unmarried, married, living together (in a formal union), widow and divorced are considered. The baseline category was unmarried. Region is categorized into the six geopolitical zones of North-Central, North-East, North-West, South-South, South-East, and South-West. The baseline category was North-Central. For insurance type, both private and public health insurance types are considered. For religion, Catholics, other Christians, Islam, Traditionalists, and others are considered. The reference category was the Catholic faith.

Empirical Model

To investigate the determinants of choice of health service providers for TB patients, a multinomial logit model was estimated. In this model, the patient's choice of health service providers was on the five independent variables. The dependent variable was categorized into the following groups: Public hospitals, Private hospitals, Pharmacy, Chemists and informal health service providers. Thus, the model in its general form is expressed below:

$Dit = f(Xi)$ ---------- (1)

Where Dit takes on values from 1, 2,3,4,5

The explanatory variables are:

X_1 = Geographical region of the patient

X_2 = Educational level of the patient

X_3 = Religion of the patient

X_4 = Health Insurance type of patient

X_5 = Age of respondent

Results

Table 1: Logistic Regression model predicting the Determinants of choice of health care providers by TB patients (n=74,405)

Socioeconomic factors	RRR	Probability
Public Hospitals (Base outcomes)		
Private (Educational Status)		
Primary	0.671	0.00*
Secondary	0.566	0.00*
Higher	0.773	0.03**
Private (Religion)		
Other Christian	0.768	0.00*
Islam	0.576	0.00*
Traditionalist	0.799	0.27
Other	5.078	0.00*
Private (Marital Status)		
Married	0.952	0.77
Living together	0.684	0.18
Widow	0.841	0.34
Divorced	1.275	0.31
Separated	0.661	0.06
Private (Age)	0.999	0.93
Private (Insurance Type)	1.096	0.60
Private (Region)		
North East	0.398	0.00
North West	0.325	0.00
South East	2.165	0.00
South West	1.572	0.00
South-South	1.532	0.00
Pharmacy (Educational Status)		
Primary	1.003	0.99
Secondary	1.804	0.99
Higher	5.070	0.99
Pharmacy (Religion)		
Other Christian	1.692	0.09***
Islam	4.385	0.00*
Traditionalist	1.935	0.32
Other	0.299	1.00
Pharmacy (Marital Status)		
Married	1.020	0.99
Living together	1.894	1.00
Widow	1.880	0.99
Divorced	3.160	0.99
Separated	2.873	0.99
Pharmacy (Age)	1.030	0.06***
Pharmacy (Insurance Type)	1.640	0.32

Pharmacy (Region)		
North East	0.398	0.01*
North West	0.146	0.00*
South East	1.026	0.93
South West	1.640	0.99
South-South	0.186	0.00*
Chemist (Educational Status)		
Primary	0.437	0.00*
Secondary	0.468	0.01**
Higher	0.102	0.00*
Chemist (Religion)		
Other Christian	1.157	0.61
Islam	0.800	0.56
Traditionalist	1.710	0.99
Other	3.370	1.00
Chemist (Marital Status)		
Married	0.196	0.00*
Living together	1.510	0.99
Widow	0.716	0.50
Divorced	0.339	1.15
Separated	0.513	0.27
Chemist (Age)	0.978	0.14
Chemist (Insurance Type)	2.299	0.07***
Chemist (Region)		
North East	1.157	0.68
North West	0.981	0.96
South East	0.987	0.96
South West	0.276	0.01*
South-South	1.089	0.81
Others (Educational Status)		
Primary	0.632	0.01*
Secondary	0.579	0.00*
Higher	0.181	0.00*
Others (Religion)		
Other Christian	2.012	0.00*
Islam	6.063	0.00*
Traditionalist	2.388	0.04**
Other	7.420	0.99
Others (Marital Status)		
Married	0.899	0.76
Living together	0.286	0.12
Widow	0.950	0.90
Divorced	1.844	0.23
Separated	1.991	0.10
Others (Age)	0.991	0.34
Others (Insurance Type)	2.027	0.02**
Others (Region)		
North East	0.271	0.00*
North West	3.740	0.99
South East	0.804	0.31
South West	1.259	0.22
South-South	0.337	0.00*

**p<0.05 **p<0.01 ***p<0.001.RRR: relative risk ratio.*

Multinomial logistic regression which is presented in Table 1 can be analyzed in the points below

- The risk of a TB patient seeking treatment from a private hospital as against public hospital is 0.671 less for a patient with primary education, 0.566 less for a patient with secondary education and 0.773 less for a patient with higher education when compared to patients without formal education. Hence, all levels of education are significant in influencing the choice of healthcare providers between public and private hospitals ($\rho < 0.05$).
- The risk of a TB patient seeking treatment from a private hospital instead of a public hospital is respectively 0.768, 0.576, 0.799 and 5.078 for other Christians, Islam, Traditionalist, and other religion when compared to the Catholic faith. Other Christians, Traditionalists, and other religions are significantly associated with the choice of health care providers between public and private hospitals ($\rho < 0.05$).
- The risk of a TB patient seeking treatment from the private hospitals rather than public hospitals is respectively 0.952, 0.684, 0.841, 1.275 and 0.661 for the married, couples living together, widow, divorced and separated when compared to the unmarried. All marital categories have no significant impact on a TB patient's choice of healthcare providers between public and private hospitals ($\rho > 0.05$).
- The risk of a TB patient seeking treatment from a private hospital rather than a public hospital for age is 0.999. Age has no significant influence on a TB patient's choice of healthcare providers between public and private hospitals ($\rho = 0.93$).
- The risk of a TB patient seeking treatment from the private hospital rather than a public hospital for health insurance type is 1.096. Therefore, the health insurance type has no significant influence on TB patient's choice of healthcare providers between public and private hospitals ($\rho = 0.06$).
- The risk of a TB patient seeking treatment from the private hospital rather than a public hospital is respectively 0.398, 0.325, 2.165, 1.572 and 1.532 for North-East, North-West, South-East, South-West, and South-South when compared to a patient in North-Central. The region is a significant determinant of a TB patient's choice of health service providers between public and private hospitals ($\rho = 0.00$).
- The risk of a TB patient seeking treatment from a Pharmacy rather than a public hospital is respectively 1.003, 1.804 and 5.070 for a patient with primary, secondary and higher education when compared to a patient without education. Education has no significant influence on a TB patient's choice of healthcare providers between public hospitals and pharmacies ($\rho = 0.99$).
- The risk of a TB patient seeking treatment from a Pharmacy rather than a public hospital is respectively 1.692, 4.385, 1.935 and 0.299 for other Christians, Islam, Traditionalists, and others, when compared to the Catholic faith. Religion has a significant influence on a TB patient's choice of healthcare providers between public hospitals and Pharmacies.
- The risk of a TB patient using the treatment of a Pharmacy rather than a public hospital is respectively 1.020, 1.894, 1.880, 3.160 and 2.873 for patients that were married, living together, widow, divorce and separated. Marital status has no significant influence on a TB patient's choice of healthcare providers between public hospitals and Pharmacies ($\rho > 0.05$).
- The risk of a TB patient using the treatment of pharmacy rather than public hospitals concerning age is 1.030. Age is significant in influencing a TB patient's choice between public hospitals and Pharmacy ($\rho = 0.06$).

- The risk of a TB patient using the treatment of a Pharmacy rather than a public hospital concerning health insurance type is 1.640. Health insurance type significantly influences a TB patient's choice of healthcare providers between public hospitals and Pharmacies ($\rho = 0.32$).
- The risk of a TB patient using the treatment of Pharmacy rather than public hospitals is respectively 0.398, 0.146, 1.026, 1.640 and 0.186 for North-East, North-West, Southeast, South-West, and South-South compared to North-Central.
- The risk of a TB patient using Chemist stores rather than public hospitals is respectively 0.437, 0.468 and 0.102 for primary, secondary and higher education when compared with the uneducated. Hence, all levels of education are significant in influencing the choice of healthcare providers between public hospitals and Chemists ($\rho < 0.05$).
- The risk of a TB patient using the Chemist store rather than the public hospitals is respectively 1.157, 0.800, 1.710 and 3.370 for Christian, Islam, traditionalist and other. Religion has no significant influence on a TB patient's choice of healthcare providers between public hospitals and Chemists ($\rho > 0.05$).
- The risk of a TB patient using the Chemist store rather than the public hospitals is respectively 0.196, 1.510, 0.716, 0.339 and 0.513 for the married, living together, widow, divorced and separated when compared to unmarried. Marital status has no significant influence on a TB patient's choice of healthcare providers between public hospitals and Chemists ($\rho > 0.05$).
- The risk of a TB patient using the Chemist store rather than the public hospitals is 0.978 with respect to age. Age has no significant influence on a TB patient's choice of health care providers between public hospitals and Chemists ($\rho > 0.05$).
- The risk of a TB patient using the Chemist store rather than the public hospital is respectively 1.157, 0.981, 0.987, 0.276 and 1.088 for North-East, North-West, South- East, South-West, and South-South when compared to North-Central. Religion is a significant determinant of a TB patient's choice of healthcare providers between public hospitals and Chemists ($\rho < 0.05$). The probability values show that region is a significant influence in a TB patient's choice of healthcare providers between public hospitals and Chemists ($\rho < 0.05$).
- The risk of a TB patient using informal health service providers rather than public hospitals is respectively 0.632, 0.579, and 0.181 for primary, secondary and higher education. Education is significant in influencing a TB patient's choice between public hospitals and other sources of health service providers ($\rho < 0.05$).
- The risk of a TB patient using informal health service provider rather than public hospitals is respectively 2.012, 6.063, 2.388 and 7.420 for other Christian, Islam, Traditionalist and other when compared to the Catholic faith. Besides other forms of religion, other Christians, Islam, and Traditionalists significantly influence TB patient's choice of healthcare providers between public hospitals and traditional forms of treatment ($\rho < 0.05$).
- The risk of a TB patient using informal health service providers rather than public hospitals is respectively 0.899, 0.286, 0.950, 1.844, and 1.998 for married, living together, widow, divorced and separated when compared to the unmarried. Marital status has no significant influence on a TB patient's choice of healthcare providers between public hospitals and other forms of treatment ($\rho > 0.05$).
- The risk of a TB patient using informal health service providers rather than public hospitals with respect to age is 0.991. Age has no significant impact on the TB patient's choice of healthcare providers between public hospitals and other traditional forms of treatments ($\rho = 0.34$).

- The risk of a TB patient using informal health service providers rather than public hospitals for health insurance type is 2.027. Insurance type significantly influences a TB patient's choice of healthcare providers between public hospitals and other traditional forms of treatment ($\rho = 0.02$).
- The risk of a TB patient using informal health service providers rather than public hospitals is respectively 0.271, 3.740, 0.804, 1.259 and 0.337 for North-East, North-West, South-East, South-West, and South-South when compared to North-Central. The probability values show that region is a significant influence in a TB patient's choice of healthcare providers between public hospitals and other traditional forms of treatment ($\rho < 0.05$).

Various Sources of Health Care Services for TB patients in Nigeria

In this model, an attempt was made to compare the rate at which each of the health service providers is used.

Table 2: Pattern of Utilization of health care providers by TB patients

Had Tuberculosis	Health service provider for TB patients				
	Public hospital	Private hospital	Pharmacy	Chemist	Others
Yes	51,516	6,234	546	641	1,842

Source: NDHS (2013)

It can be seen from Table 2 that 51, 516 of the patients with TB utilized public hospitals for their treatment, 6,234 patients utilized private hospital, 546 patients utilized pharmacy, while 1,842 patients utilized informal health service providers, which are traditional care providers. Among the health service providers, public hospitals have the highest number of patients utilizing care from it. This shows a huge gap between the services rendered by public hospitals and other health service providers to TB patients.

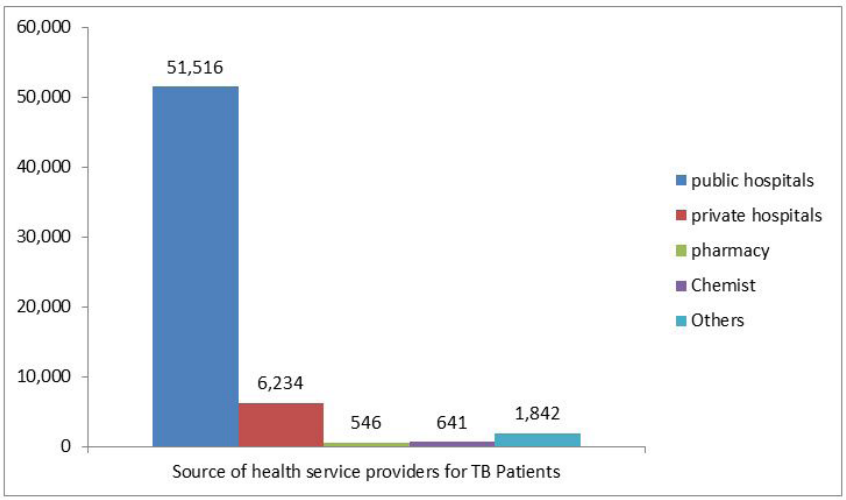

Fig.1: Various sources of service providers for TB patients in Nigeria

Comparison of TB Prevalent Rate among Six Geopolitical Zones in Nigeria

Table 3 presents the TB prevalence rate among the six geo-political zones in Nigeria.

Table 3: Comparison of TB Prevalence among the six geopolitical zones

Had Tuberculosis	Geo-political zone					
	North Central	North East	North West	South East	South West	South-South
No	7,647	7,273	9,607	616	2,817	2,743
Yes	10,984	16,722	19,731	8,976	9,189	8,803

Source: NDHS (2013)

The result of the analysis which sought to compare TB prevalence, among the six geopolitical zones in Nigeria shows that among all the regions, North-West (19,731) had the highest TB prevalence rate. North-East is next (16,722), followed by North-central (10,984). In the South, South-West had the highest prevalence rate (9,189), next was South-South (8,803) and the least South-East (8,676).

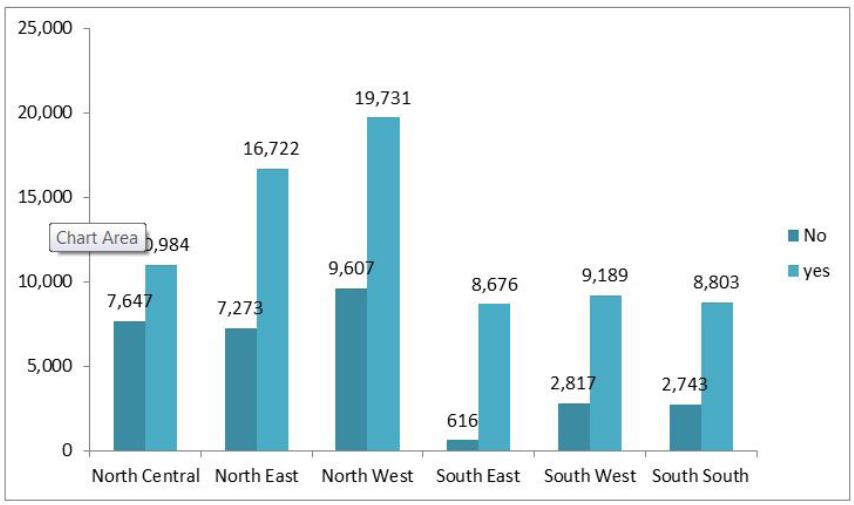

Fig.2: TB prevalent rate in six geopolitical zones of Nigeria

Policy Implications

This study has yielded results that are amenable to policy implications. The study has shown that the coefficient of education is both positive and statistically significant in most of the health service providers. This portends that educated people are more prone to seeking professional treatments than either self-medication or informal health service providers. This finding corroborates findings by many authors in the literature review. Furthermore, the study showed that the preference for public health facilities exceeds that of private (Murilhi, 2003). Overall, educated people can distinguish qualitative health service providers from their non-qualitative counterparts (Oxal & Balden, 1996). Again, the coefficient of age is found to be positive and significant in most of the facilities, hence there is a tendency that one's demand for professional health service providers increases with his/her age. This conforms to findings in the literature

that households headed by older people have a higher propensity of seeking professional health care rather than self-medication. Also, the region is both significant and positive, showing that the region a TB patient is found plays a major role in his/her choice of a health service provider. This study is informed by the quest to know the factors determining the choice of health service providers by TB patients. The study was motivated by the fact that TB is becoming epidemic in Nigeria and that the age that is most affected is the economic vibrant age (18-35 yrs.) using a multinomial logistic regression, percentages, and frequencies, the study reported the following under-listed findings:

- Education, age and region are three significant determinants of TB patient's choice of health service providers. As education and age increases, greater is the demand for professional health service providers.
- Most TB patients used public hospitals when compared to any other health service provider. This is accounted for by the subsidized cost of treatment and knowledge of medical professionals in government-owned hospitals.
- In the analysis of TB prevalent rate among regions, the North is the worst hit, particularly the North-Western geopolitical zone.

Limitations

Despite the utility from this study, it is not without limitations. The variables used to explain the behavior of TB patients are never exhaustive. For instance, the study did not consider the quality and affordability of healthcare services from the various health service providers. Nonetheless, the study has provided evidence-based information on determinants of choice of health service providers by TB patients using a nationally representative sample.

Conclusions

Based on the estimated and analyzed results, it is recommended that the government should put in place policies to expand educational opportunities for people particularly in the northern geopolitical zones where TB prevalence is highest. Educated TB patients are better informed of the most workable choice of health care providers to use for treatment. From the study, it is obvious that the number of TB patients patronizing public hospitals far outweighs those patronizing private hospitals; it behooves the government, therefore, to put in place measures to upgrade public hospitals. Standards should be set in the areas of equipment, medical personnel, performance, etc. The government should increase the share of its budgetary allocation going to the North, particularly the North-Western region to curb the menacing High TB prevalent in that region. Conclusively, TB has become an epidemic eroding Nigeria's productive base by affecting the virile part of the population (people in the age bracket of (18-35 yrs.). To promote a healthy workforce and achieve the Sustainable Development Goals (SDGs), the government should pragmatically implement the policies recommended above.

Abbreviations

TB: Tuberculosis; **PMVs**: Patent Medicine Vendors; **LGA**: Local Government Authorities; **SDGs**: Sustainable Development Goals; **MDR**: Multi-drug Resistant; **NDHS**: National Demographic Health Survey; **DOTS**: Directly observed treatment short courses; **DR**: De Republic of Congo; **RRR**: Relative Risk Ratio

References

Abodurin, O.L., Bamidele, O., Olugbenga –Bello, A. I., & Parakoyi, D.B (2010). The preferred choice of health facilities for health care among adult residents in Ilorin metropolis Kwara state, Nigeria. *International Journal of Health Research*, 3(2), 79–86

Abiodun, O.A., & Olu-Abiodun, O. O. (2014). The determinants of choice of health facility in Sagamu South-West, Nigeria. *Scholars Journal of Applied Medical Sciences*, 2(1c), 274 –282

Alphonsus, I; Abebe, F. (2012). Assessment of defaulting from Directly Observed Treatment short courses and its determinants in Benin city. *Journal of Tuberculosis Research*, 2,30-39.

Amaghionyeodiwe, L.A. (2008). Determinants of the choice of health care providers in Nigeria. *Health care management science*, 11(3), 215–227. Retrieved from http://dx.doi.org/10.1007/s10729–007–9038–3

Awoyemi, T.T., Obayelu, O.A., & Opaluwa, H.I. (2011). Effect of distance on utilization of healthcare services in rural Kogi state, Nigeria. *J Hum Ecol*, 35(1),1–9

Federal Government of Nigeria (2012). Report the first National TB prevalence survey.

Fosu, G.B. (1994). Childhood morbidity and health service utilization: Cross-national Comparisons of user-related factors from DHS data. *Social Science and Medicine*, *38*, 1209- 20.

Ichoku, H.E., & Leibburandt, M. (2003). Demand for health care services in Nigeria. *International Journal of Health Planning and Management*, 11, 53-67

Idowu, A.E. (2013). The socio-cultural context of Maternal Health in Lagos State, Nigeria, Ph.D. Thesis at Covenant University. Retrieved from semantic scholar.org/1f56.

Idowu, A.E., Osinaike, M.O., & Ajayi, M.P. (2011). Maternal health challenges and Prospects for National Development: A study of Badagry Local Government Area, Lagos State. *Gender and Behaviour, 9*(20), 4224-4046.

Joseph, O., Muhammed, A ., Rajis, A., Ibimidu, A., Joseph, A., & Kadiri.(2017). Factors determining the utilization of health care facilities in a semi-urban setting in Kwara State, Nigeria. *Anthropological Research and Studies.DOI.*http://doi.org/10.26758/7.1.9.

Liu, Y; King, Q; Yuan, S., & Van, D.K.J (2018). Factors influencing the choice of health system access level in China: a systematic review. *Plos ONE, 13*(8), e201887.

Murilhi, M.K. (2003). The determinants of health-seeking behaviour in a Nairobi, Kenya. *Economic Scientific Journal*, 9(8), 151-164.

Nigeria Demographic and Health Survey (NDHs, 2013)–The DHS program. Retrieved from https://dhsprogram.com/publications/publications-fr293-dhs-final-report.cfm

Oluwadare, C., & Ibirinde, B. (2010). Health seeking Behaviour of Tuberculosis Patients in Ekiti State, Nigeria. *Ethno Med,* 4(3), 191-197.

Oluwadare, C.T., & Oluwasanmi, L. (2003). Reports of participatory Social Assessment in support of Radio Diary initiative in Ekiti state. Report to the Ekiti partnership for transforming the Health system. DFID funded program. Ado Ekiti: Nigeria

Orubuloye, I.O., Ajakaiye, O.O. (2002). Health Seeking Behaviours in Nigeria. Ibadan: Nigerian Institute of Social and Economic Research.Retrieved from www.Worldcat.org/title/health-seeking behaviour in Nigeria.

Oxal, Z.; & Baden, S. (1996). Challenges to women reproductive health: Maternal mortality. A report at the request of the Social Development, Department for Overseas Development (DFID), UK.

Syed, A.H., Shamsuddin, M.D. Z.S., & Azher, A.M. (2005). Determinants of choice health Care Providers: evidence from selected rural areas of Bangladesh. *Pakistan Journal of Social Sciences*, 3, 437-444

Tanimola, M.A., & Onoyemi, J.O. (2009). Health care-seeking behaviours in Anyigba, North– Central, Nigeria. *Research Journal of Medical Sciences*, 3(2), 47–51.

Thaddeus, S., & Maine, D. (1994). Too far to walk maternal mortality in context. *Social Science and Medicine*, 38(8),1091-1110.

This day (June 23rd, 2017). The Tuberculosis burden. Retrieved from https://www.thisdaylive.com/index.php/2017/06/23/the tuberculosis -burden

Uchendu, O.C; Ilesanmi, O.S., & Olumide, A.E.(2013). Factors influencing the choice of health care providing facility among workers in a local government secretariat in southwestern Nigeria. *Annals of Ibadan Postgraduate Medicine*, 11 (2), 87 – 94.

Uzochukwu, B.S.C., & Onwujekwe, O.E (2004). Socioeconomic differences and health-seeking behaviour for the diagnosis and treatment of malaria: a case study of four LGAs operating the Bamako Initiative Programme(BIP) in Southeastern Nigeria. *International Journal for Equity in Health*,3(6). DOI: 10.1186/1475-9276-3-6

World Health Organization/ International Union against Tuberculosis and Lung Disease. Anti-tuberculosis drug resistance in the World: 3rd global report. Geneva: WHO, 2004. Report No: WHO/HTM/TB/2004:343

Yaya, S., Okonofua, F.E., Ntoimo, L., Udenige, O., & Bishwajit, G.(2019). Gender Inequality as a barrier to women's access to skilled pregnancy care in rural Nigeria: a qualitative study. *International Health*, 11(6), 551-560.

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