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Assessment of satisfaction with quality of care among insured and non-insued Tuberculosis patients in Osun State

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Abstract
Tuberculosis remains a major global health issue, particularly in developing countries like Nigeria. Nigeria ranks first in Africa and fourth among the world's 22 high-burden countries for tuberculosis. The quality of care delivered to tuberculosis patients has a significant impact on treatment adherence, results, and patient satisfaction. Insurance coverage is widely viewed as a critical determinant in access to quality healthcare, with substantial variations in care between insured and uninsured people. This study aims to assess and compare the level of satisfaction with the quality of care among insured and non-insured tuberculosis patients in Osun State. It is a comparative; cross-sectional design was used to study 320 tuberculosis patients (160 insured and 160 non-insured). A multi-stage sampling technique was employed to select the participants. The data collected was processed and analyzed using the Statistical Package for Social Sciences (IBM SPSS version 25.0). Descriptive statistics were conducted for categorical variables. T-tests and Chi-square tests were used to compare proportions between categorical variables ($p<0.05$). There was a significant association between age, marital status, and the level of satisfaction with ease of access to care ($p<0.05$). Most respondents (both insured and non-insured) tested negative for HIV ($X^2= 11.227$, $p= 0.011$). Additionally, more than half of the respondents reported that the facility was nearby ($X^2= 2.981$, $p= 0.395$). The study found that the level of satisfaction with all components of quality tuberculosis care was higher among insured respondents compared to non-insured respondents. The level of satisfaction with all components of tuberculosis care received was higher among insured respondents than non-insured tuberculosis respondents.
Keywords: *Tuberculosis, insured, non-insured, satisfaction, treatment, Quality of care.*

INTRODUCTION

Tuberculosis (TB) continues to be a major public health issue globally. In 2012, there were 8.6 million new TB cases and 1.3 million TB-related deaths. The African region alone accounted for 27% of the world's cases and had the highest rates of cases and deaths relative to population, with an average of 225 incident cases per 100,000 people, more than double the global average of 122 (Bulage *et al*., 2014). TB is a global health concern; nearly one-third of the global population is infected with Mycobacterium tuberculosis and at risk of developing the disease. Over 90% of global TB cases and deaths occur in the developing world, where 75% of cases are in the most economically productive age group. The World Health Organization (WHO) recommends the Directly Observed Treatment Short-course (DOTS) strategy for controlling TB. This strategy has been adopted by more than 180 countries and is considered the most appropriate and cost-effective approach for TB control. The WHO's target for global TB control was to detect at least 70% of estimated smear-positive TB cases and achieve an 85% treatment success rate by 2005. However, only a few high TB burden countries have met both targets (Nezenega *et al*., 2013). Importantly, the TB disease burden is unequally distributed between men and women. Of the estimated 8.7 million incident TB cases and 1.4 million deaths globally in 2011, roughly one-third occurred among women (2.9 million incident TB cases and 0.5 million deaths) (Yang *et al*., 2014).

In the context of poor economic conditions, corruption, and political instability, infectious diseases have become one of the most significant health burdens in Africa. Among these, tuberculosis (TB) has emerged as the leading cause of death from a single infectious agent. TB is primarily caused by *Mycobacterium tuberculosis*, and occasionally by *Mycobacterium bovis* and *Mycobacterium africanum*. M. tuberculosis is a gram-positive, acid-fast, slender-straight rod that thrives best in organs with high oxygen tension, such as the lung apices, renal parenchyma, and the growing ends of bones. In most cases, it is the causative agent of the disease. *M. bovis*, another pathogen in the complex, has clinical characteristics indistinguishable from *M. tuberculosis*. The bacteria that cause TB (*M. tuberculosis, M. bovis,* and *M. africanum*) are responsible for lesions called

tubercles in patients with TB, hence the name tubercle bacilli. Transmission occurs exclusively through the inhalation of infectious droplets from patients with active pulmonary TB, spread by coughing, sneezing, talking, or spitting. Factors determining an individual's risk of exposure include the concentration of droplet nuclei in the air, duration of exposure, and the level of immunity (susceptibility to infection).

Once infected, an individual can remain asymptomatic and healthy for a lifetime without developing the disease. However, the weakening of the immune system, particularly due to HIV infection, can trigger the development of TB. Overcrowding, substandard living conditions, poor nutrition, and interactions with other diseases increase the risk of TB and lead to high rates of reinfection, morbidity, and mortality. People infected with TB often come from the most vulnerable sectors of society, including those living in poverty, prisons, and poor working conditions. Reducing stress, avoiding environmental pollution, improving economic and living conditions, better nutrition, and regular interaction with healthcare workers can reduce the risk of infection and disease progression.

Recent data and literature reviews have highlighted the disparity in the level of healthcare services received by individuals with health insurance compared to those without. This trend is consistent globally, particularly in the incidence, treatment, and quality of care for tuberculosis patients. Consequently, evaluating and comparing the satisfaction with the quality of care between insured and non-insured tuberculosis patients, by understanding the differences in satisfaction levels, can help identify areas for improvement in healthcare services for both groups.

Materials and Methods

Study design

A descriptive cross-sectional study design.

Study population: Insured and non-insured tuberculosis patients in Osun state, a state in southwestern Nigeria; bounded to the east by Ekiti and Ondo states, to the north by Kwara State, to the south by Ogun State and to the west by Oyo State.

Eligibility

Inclusion criteria

Individuals in Osun State diagnosed with tuberculosis and currently receiving treatment or medical care, ranging in age from 10 to 85 years old.

Exclusion criteria

Insured and non-insured enrollees (TB patients) who are within 10- 85 years and who refused to participate in the survey.

Sample size determination

The minimum sample size was determined by using the formula for calculating sample size for the comparison of two independent proportions:

N/per group =

Where,

N/per group = minimum sample size per group

Za = standard normal deviate corresponding to the probability a, i.e. the probability of making a type 1 error at 5% = 1.96.

Zb = standard normal deviate corresponding to the probability b, i.e. the probability of making a type 2 error using a power of 95% = 5% power (1-b) = 95% = 1.64

p0-p1 = the difference between the quality of satisfaction of care between insured and non-insured tuberculosis patients from a previous study.

For p= arithmetic average of the two proportions (p0 and p1). Based on previous studies, p0 (quality of satisfaction of care among insured tuberculosis patients) = 85.8% (Michael et al., 2017) and p1 (quality of satisfaction of care among non-insured tuberculosis patients) =29 % (Solorio et al., 2002).

Therefore, p = 0.29+0.858/2 = 0.574

Hence, N/per group =

Thus, calculated sample size per area (n) = 81

To accommodate for a 10% non-response rate, the calculated sample size was increased to 160.

Sampling techniques

A multistage sampling technique was used in this study. In the first stage, one senatorial district was selected from the three senatorial districts in Osun State using a simple random sampling. In the second stage, from ten local government areas (LGAs) in Osun Central District, six were selected by simple random sampling. In the third stage, out of the 448 DOTS facilities in Osun State, 30 facilities within the selected LGAs were chosen using simple random sampling. In the last stage, TB patients were selected from Primary Health Centres (PHCs) using systematic sampling with a sampling fraction based on proportional allocation.

Instrument and method of data collection

A semi-structured interview-administered quantitative instrument was used to collect information from the

respondents. The first section of the instrument covered respondents' socio-demographic characteristics, while the second section assessed their satisfaction with the quality of care, including ease of access, waiting time, and health education services.

Data collection and management

Quantitative data were collected from TB patients in selected TB clinics using a semi-structured, self-administered questionnaire. The data was entered into the Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics, including means and standard deviations, were calculated for continuous variables with normal distributions after testing for normality. Frequencies and percentages were generated for categorical variables related to socio-demographic characteristics. Bivariate analysis was conducted between the independent variables (socio-demographic characteristics) and the dependent variable (level of satisfaction with the quality of services).

Scoring of outcome variables

The satisfaction level was assessed using a five-point Likert scale. Satisfaction with the quality of care was measured across the following domains: Ease of access to TB services (six items), Waiting time (four items), Registration (four items), Health Education (five items), Laboratory services (three items), Adherence counseling (four items), Medication (three items), Amenities (four items), Staff attitude (three items), and Confidentiality (two items). The scale of measurement was as follows: 4 (excellent), 3 (very good), 2 (good), 1 (fair), and 0 (poor). The response scale ranged from 0 to 4, with scores for each domain being calculated to yield a total and mean score (36.87). Individuals with scores below the mean were classified as not satisfied, while those with scores above the mean were classified as satisfied with the quality of services.

Ethical consideration

Ethical approval was obtained from the Health Research and Ethics Committee (HREC) of the College of Health Sciences (CHS), Osun State University. Additionally, entry permission was granted by the officers in charge of the DOTS clinics.

RESULTS

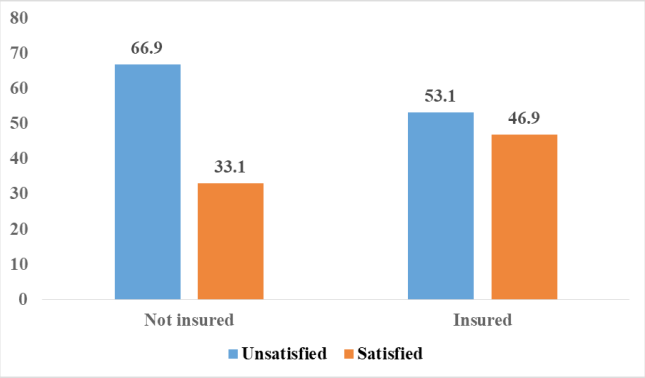
Table1: Socio-demographic characteristics of the respondents of insured and non-insured Tuberculosis Patients (N=320)

Variable	Insured		Non-insured		Statistics
Variable	**Frequency**	**Percentage (%)**	**Frequency**	**Percentage (%)**	
Age					
15-25	34	28.8	8	7.5	X^2=23.274 P= 0.000
26-35	47	39.8	65	60.7	
36-49	25	21.2	29	27.1	
50-65	8	6.8	4	3.7	
66 and older	4	3.4	1	0.9	
Sex					
Male	84	52.5	73	45.6	X2=1.250 P= **0.263**
Female	76	47.5	87	54.4	
Tribe					
Ibo	2	1.2	2	1.2	X2= 1.803 P= 0.406
Hausa	43	26.9	54	33.8	
Yoruba	115	71.9	104	65.0	
Religion					
Christianity	43	26.9	54	33.8	X2= 2.667 P= 0.264
Islam	114	71.2	105	65.6	
Others	3	1.9	1	0.6	
Marital status					
Never married	37	23.1	44	27.5	X2= 2.652 P= 0.618
Married	104	65.0	97	60.6	
Widowed	6	3.8	8	5.0	
Divorced	10	6.2	6	3.8	
Others	3	1.9	5	3.1	
Education level ever attained					
No formal education	3	1.9	6	3.8	X2= 4.992 P= 0.288
Primary	14	8.8	6	3.8	
Junior secondary	31	19.4	27	16.9	
Senior secondary	61	38.1	64	40.0	
Tertiary	51	31.9	57	35.6	

Table 2: Assessment of the level of satisfaction with the quality of care among insured and non-insured tuberculosis patients

Level of Satisfaction	**Mean ± Std. Deviation**	**T and p-value**	**Mean ± Std. Deviation**	**t and p-value**
	Insured		**Non-insured**	
Level of satisfaction with quality of ease of getting care				
Satisfied	0.9623 ± 0.19238	t=4.400, p<0.001	0.4533 ± 0.50117	t=3.158, p<0.005
Not satisfied	0.6636 ± 0.47472	t=5.641, p<0.001	0.2235 ± 0.41908	t= 3.123, p<0.005
Level of satisfaction with overall time spent in the facility				
Satisfied	4.5094 ± 0.72384	t= 5.860, p<0.001	3.4667± 1.29795	t= 5.111, p<0.001
Not satisfied	3.4766 ± 1.17639	t= 6.837, p<0.001	2.4941 ±1.10866	t= 5.061 , p<0.001
Level of satisfaction with the process of client registration in the facility				
Satisfied	3.3528 ± 0.63748	t= 4.205, p<0.001	3.4400 ± 1.44484	t= 3.591, p<0.001
Not satisfied	3.6729 ± 1.27217	t= 5.166, p<0.001	2.6353 ± 1.38742	t= 3.582, p<0.001
Level of satisfaction with health education services you received from the health facility				
Satisfied	4.5660 ± 0.72083	t= 6.767, p<0.001	3.3467 ±1.47496	t= 3.632, p<0.001
Not satisfied	3.3364 ± 1.22045	t= 7.983, p<0.001	2.5647 ± 1.24830	t= 3.594, p<0.001
Level of satisfaction with the services you received from the laboratory				
Satisfied	4.3774± 0.83727	t= 5.031, p<0.001	3.4267 ± 1.34740	t= 3.464, p= 0.001
Not satisfied	3.4206± 1.25170	t= 5.731 , p<0.001	2.7294 ± 1.19909	t= 3.438, p= 0.001
Level of satisfaction with adherence counseling services you received from the facility				
Satisfied	4.2453± 0.80636	t= 3.034, p=0.003	3.3467 ± 1.49317	t= 3.578, p<0.001
Not satisfied	3.6729± 1.24972	t=3.492, p= 0.001	2.5765± 1.22840	t= 3.535, p=0.001
Level of satisfaction with drugs services you received from the facility				
Satisfied	4.3585± 0.78677	t= 3.385, p=0.001	3.4533± 1.40744	t= 4.257, p<0.001
Not satisfied	3.7477± 1.19032	t= 3.869, p<0.001	2.6000 ± 1.12546	t= 4.197, p<0.001
Level of satisfaction with the services you received from the facility				
Satisfied	4.3585± 0.83423	t=4.724, p<0.001	3.2533 ± 1.43408	t= 3.958, p<0.001
Not satisfied	3.5047± 1.17661	t= 5.288, p< 0.001	2.4471 ± 1.13919	t= 3.902, p<0.001
Level of satisfaction with money spent on other services you received from the facility				
Satisfied	4.6415 ± 0.59142	t= 5.789, p<0.001	3.5467± 1.38811	t= 4.593, p<0.001
Not satisfied	3.6168 ± 1.21814	t= 7.162, p<0.001	2.6118± 1.18617	t= 4.549, p<0.001

Figure 1: Comparison of level of satisfaction between insured and non-insured tuberculosis patients.



DISCUSSION

This study aims to evaluate satisfaction with the quality of care received by insured and non-insured enrollees in Osun state. The determinants of satisfaction levels among the insured and non-insured included socio-demographic characteristics, waiting time experience, and the type of facility where services were accessed. The results indicated that insured TB patients had a higher overall satisfaction level with the quality of care compared to those who were not insured. The study also found significant differences in satisfaction with doctors' care and waiting time before receiving care between insured respondents and non-insured enrollees, aligning with the findings of (Akande *et al.* 2022).

The treatment of TB is a fundamental aspect of any National Tuberculosis Program (NTP). Evaluating the quality of TB treatment services is crucial as it provides insight into the health system's performance and fosters improved care. The study revealed that most respondents were female, with the 26-35 age group being the most represented. This finding aligns with (Akande *et al.* 2012) from a study in Kwara state, Nigeria, which also reported a higher population of females than males. However, it contrasts with Ukwaja *et al.* (2013), where most respondents were male. Additionally, a study in Oyo state reported more males than females (Insurance Scheme among Non-Teaching Staff in 2014) and had many of its respondents in the 25-55 age group, like the age group with the highest percentage in this study.

Most respondents were married, which is expected given cultural norms in their age group in this region. This finding aligns with (Agba, 2010) and supports the view that there's no direct evidence suggesting that TB infection itself affects marital status. However, the social and economic impacts of TB can indirectly influence marital status. The study also considered respondents' awareness of insurance, finding that while most were aware, some were not yet registered under any insurance. This aligns with findings from a study in South-East Nigeria (Ohagwu *et al*, 2010), but contrasts with another study where the attitude towards insurance adoption was not encouraging (Insurance Scheme among Non-Teaching Staff, 2014.

Both insured and non-insured respondents in this study find it easy and spend less than 30 minutes to reach the facility without a need for transportation, since it is mostly nearby. This finding aligns with the study by Onyeonoro *et al.* 2015), which evaluated patient satisfaction with tuberculosis services in Southwestern Nigeria. The study attributed satisfaction with access to care to the increased availability of TB services following the DOTS expansion and enhancements in recent years, which brought TB services closer to the people. Between 2008 and 2010, the National TB Program (NTP) undertook a significant expansion of TB diagnostic and treatment centers across the country. By the end of 2010, nearly 100% DOTS coverage was achieved by Local Government Areas, with 3,931 TB DOTS service centers and 1,025 TB microscopy laboratory services. However, insured and non-insured respondents who use transportation stated that they travel from their place of work rather than their residence, hence the need for transportation.

This study also indicates that younger individuals have lower satisfaction with the overall quality of care. Numerous other studies have highlighted higher satisfaction levels with various aspects of health services among older patients compared to younger ones (Schoenfelder *et al*., 2011). Other research suggests that this may be because older clients are less critical of the healthcare services they receive, and Nigerian cultural values often grant special privileges to elderly clients, which is a common occurrence even in healthcare settings. Therefore, the socio-demographic characteristics of clients, particularly their age and their perception of quality of care, play a significant role in their decision-making process, especially in service utilization under the scheme. These findings align with the general trend observed in previous satisfaction studies, which reported that older clients were more satisfied with service provision than younger clients (Akande *et al*., 2022).

A notable observation in this study is that while a higher percentage of non-insured respondents reported being dissatisfied with the quality of care, a significant number of insured respondents expressed the same low level

of satisfaction, particularly on indicators like waiting times, health education services, and the overall ease of obtaining care. This finding is supported by another study that identified these variables as key contributors to satisfaction levels among respondents (Ababa, 2020). Respondents with higher education are more likely to value the information and services provided by DOTS staff, leading to better-informed health decisions. In this study, low satisfaction among educated respondents was attributed to their high expectations of service quality, which were not met. Additionally, the generally low satisfaction could stem from the fact that most respondents belong to the working class or the economically productive age group. Spending long hours at DOTS results in them forfeiting other economic activities (Bello et al, 2010; Iweama *et al*., 2021).

Low satisfaction with amenities may stem from the neglected condition of many TB facilities, particularly public DOTS centres, which lack basic comforts for patients. The health sector generally suffers from budget misallocations, and TB funding is often not prioritised by health managers and policymakers who do not view it as a revenue-generating area (Onyeonoro *et al*., 2015). The low satisfaction with health education services (inadequate information provided to TB patients) is attributed to resource and time constraints (Bulage *et al*., 2014).

STUDY LIMITATIONS

Information bias cannot be ruled out, as some patients may have provided information that was considered ideal, especially in relation to the quality and level of satisfaction with tuberculosis. However, confidentiality and privacy of responses were guaranteed during questionnaire administration.

CONCLUSION

Satisfaction among insured and non-insured tuberculosis respondents was significantly associated with socio-demographic characteristics such as age and marital status. Other variables that demonstrated significant associations included confidentiality, adherence counselling, laboratory services, registration duration, staff attitude, and the ease of care accessed by both insured and non-insured tuberculosis patients. Furthermore, it was noted that the patient-healthcare provider relationship was generally positive, with numerous insured clients receiving higher quality care in comparison to their non-insured counterparts.

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