



Assessing the Level of Satisfaction of Patients with TB-DOTS Implementation in Rural and Urban Centres of Selected DOTS accredited facilities in Anambra State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author MCO, FI and CCA conceptualized and designed the study, performed the statistical analysis. Authors MUE, CRA, and IGE wrote the protocol and wrote the first draft of the manuscript. Authors MCO, CCA, and FI and collected, collated and managed the analyses of the study. Authors CRA, MUE, and IGE managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: This study assessed the level of satisfaction of patients with TB implementation in selected DOTS accredited facilities.

Methodology: A comparative cross-sectional analytic study involving rural and urban areas implementing DOTS for TB in Anambra State was done. A total of 354 respondents (177 per sub population) were enrolled in the study. By exit interview respondents were administered the

questionnaire that bordered on services rendered and cost implications of accessing treatment at the facilities.

Results: A total of 162(91.5%) rural respondents were satisfied with appropriateness of working hours compared to 166(93.8%) participants in urban areas. Also 141(79.7%) respondents in rural areas were satisfied with waiting time compared to 155(87.6%) in urban areas and this was statistically significant $p < 0.004$. For the cleanliness of the specimen bottle 138(77.8%) rural respondents compared to 148(83.6%) in urban areas were satisfied and this was statistically significant, $p < 0.001$. Majority of the urban respondents 123(68.9%) were satisfied with respect offered by health workers compared to rural 114(64.4%), and this was also significant, $p < 0.000$. Concerning cost incurred and information given by health workers more urban respondents 5(2.8%) were dissatisfied compared to rural 2(1.1%) though not statistically significant $p = 0.378$. However, satisfaction was slightly higher in urban (82.8%) compared to rural (80.8%) respondents, while the overall satisfaction in this study was 81.8%.

Conclusion: Patient's satisfaction is a panacea for successful DOTS implementation. We therefore recommend that satisfaction could be improved by provision patient-centred requests such as provision of multivitamins, transport, food among others to help improve DOTS because it will encourage attendance and adherence with better outcomes.

Keywords: Satisfaction; TB-DOTS; implementation; rural an urban centres; Anambra state.

1. INTRODUCTION

Directly Observed Treatment Short-course (DOTS) is a comprehensive strategy that ensures cure to most people with Tuberculosis (TB) presenting to primary healthcare services [1]. It is a strategy that has been used over the years to decrease the number of Tuberculosis cases in the affected populace [1,2]. Nigeria is ranked 4th among the 22 high burden countries for TB in the world and 1st in Africa. The 36 states and Federal capital territory has notified about 90,311 of all forms of TB cases as at the year 2010 revised manual report [3]. Tuberculosis is an infectious disease which remains a leading cause of death in Sub-Saharan Africa [4]. The mortality rate is being worsened by poverty, poor political will, poor laboratory services, weak health systems, poor drug supply, inadequate human resources, drug resistant TB, and in the last two decades as a result of HIV/AIDS pandemic [4,5].

Furthermore, Daniel and Alausa, in Nigeria also showed in their study that up to 83% of patients delayed in seeking treatment, which is dangerous because of infectious nature of tuberculosis. These may be as a result of one form of dissatisfaction noticed at the TB-DOTS accredited facility [6]. Therefore, the provision of good quality Tuberculosis care especially in all DOTS accredited facilities is an important component of TB control strategy to reduce patient's dissatisfaction with DOTS which could cause them to default and eventually result in Multidrug Resistant TB (MDR -TB) [7]. Apart

from the fact that some patients may not want to visit public hospitals because of stigma or attitude of health workers, one major constraint limiting the attainment of targets set by WHO, is the poor involvement of the private sector in TB control programmes. The current Stop-TB strategy calls for promotion of Public-Private Partnership (PPP) which has been started since 2006 [8].

Patients who visit either private or public health facility have also been shown to be dissatisfied with poor supply of drugs or expired medication as could be seen in Ethiopia [9] where supervision by the TBL focal person was not regular and possibly drugs that past the date of usage was given to patients. Another study done in Jimma Zone South West Ethiopia buttressed the fact that shortage of laboratory reagents and slides for sputum smear microscopy were problems identified and this could hamper service delivery and keep patients away from DOTS accredited facilities [10].

Another factor that affected client satisfaction was the pattern of patient-provider interactions. It was noted that patient-centred services which are in favour of the principles of quality healthcare and continuous quality improvement approaches attracted and kept patients adherent to all their medications [11].

Regarding the activities of the laboratory, in Plateau State, Nigeria it was noted that discordant laboratory results have also led some patients to other health facilities for confirmatory tests. This would not only discourage patients

from visiting the initial facility but also distort records of TBL registers for monitoring [12]. It is also pertinent to state that such laboratory discordant rate in results of patients must be kept at minimum because the National TB and Leprosy workers manual [13], WHO, and Stop TB strategy not only advocated treatment success rate of at least 85%, default rate of less than 3% but also discordant rate of not more than 0.5% among all slides that are examined for quality assurance. It is important therefore to state that accessibility of guaranteed and qualitative services to patients and satisfaction with these services are motivating factors that encourage patients to keep attending these clinics as well as stay adherent to treatment [14].

In order for patients to comply with treatment they have to be satisfied with services rendered both in personnel, logistics, and medications. Compliance therefore, is a key factor for treatment success [15]. When patients are satisfied they will most likely utilize health services, comply with medical treatment and also keep pace with health care providers. Therefore promoting compliance through patient-centred approach has been said to be more effective than spending resources on defaulter tracking which is cumbersome and wasteful in terms of limited resources and time [16].

This study therefore assessed the satisfaction of patients accessing TB care in facilities accredited for treatment, which is an important factor for determining the continuation and completion of care to stop TB disease in the population.

2. METHODOLOGY

2.1 Study Area

The study was conducted in Anambra State, which is located in the South East Geo-political zone of Nigeria, at coordinates 6°20'N 7°00'E. The state has 21 Local Government Areas out of which 8 of these were used as a representative of one third of the LGA's so that the results could be generalized [17]. There are 31 state government owned general hospitals, a federal teaching hospital, a state teaching hospital, 14 mission hospitals, 189 maternity homes and about 600 private hospitals and clinics [18]. According to the 2006 TB-DOTS directory, there are 104 DOTS accredited facilities in Anambra State but some of these facilities are no longer

functional while new centres have been activated, however, no comprehensive updated list was accessible. Of the 104 DOTS accredited facilities, 32 were utilized from the 8 local governments in this study (Appendix I).

2.2 Study Design

A comparative cross-sectional analytic study involving rural and urban areas implementing DOTS strategy for TB in Anambra State was done.

2.3 Study Population

The population for this study comprised of 354 males and females aged between 18 years to 60 years, who were accessing TB chemotherapy in these selected DOTS accredited centres in the Local Government Areas.

2.4 Study Instrument

A pretested semi-structured, interviewer administered questionnaire was used for this study. The questionnaire originally developed by some authors [19,4] was adapted. It assessed patient's satisfaction for the management of Tuberculosis.

2.4. Sample Size Determination

The minimum sample size for this study was 354 respondents, that is, 177 Urban and 177 Rural. This was done using the formula for comparing two proportions.

$$n = \frac{\left\{ u \sqrt{[\pi_1(1-\pi_1) + \pi_0(1-\pi_0)]} + v \sqrt{[2\bar{\pi}(1-\bar{\pi})]} \right\}^2}{(\pi_0 - \pi_1)^2}$$

Where n = Minimum sample size

u = one sided percentage point of the normal distribution corresponding to 100% - power (ie 1-β). For power of 90%, *u* = 1.28

v = percentage point of the normal distribution corresponding to the two sided significance level. For α = 5% or 0.05, *v* = 1.96

After substituting a figure of 177 per sub population was arrived at.

This brings to a total of 354 respondents for both rural and urban areas.

2.5 Method of Data Collection

Community entry with advocacy visits preceded data collection. A formal letter of introduction by the researchers was presented to the State TBL Coordinator, and heads of the chosen TB-DOTS accredited facilities. The questionnaires were then administered by the researchers to the respondents after obtaining verbal informed consent and written authorization from them. Each participant who visited the facility on a particular day was giving the questionnaire at exit point to access their satisfaction with services rendered.

2.6 Data Management

Data was collected, cleaned, coded and checked for any data collection and coding errors. This was followed by entry into International Business Machines-Statistical Package for Social Sciences (IBM-SPSS) version 21.0. Pearson’s Chi Square and Fisher’s exact test was employed for test of statistical significance at $p < 0.05$.

3. RESULTS

The Table 1 below showed the socio-demographics of the respondents. The commonest age group affected were those

between 26-32 years old which was 43.5% in rural compared to 34.5% in urban. The mean age of the study population was 34.5 ± 13.8 . There were more new cases than retreatment in urban compared to rural areas (96.1% to 93.2%) while more private workers (53.7%) had it in rural compared to unemployed respondents in urban (49.9).

Table 2 below showed participant’s satisfaction with DOTS services in rural and urban areas. A total of 162(91.5%) rural respondents were satisfied with appropriateness of working hours compared to 166(93.8%) participants in urban areas. One hundred and forty-one (79.7%) respondents in rural areas were satisfied with waiting time while 155(87.6%) were also satisfied in urban areas and this was statistically significant $p < 0.004$. Only one person in the urban area was not satisfied with waiting time.

Considering the time spent by the health worker, 138(77.9%) were satisfied in rural areas while 139(78.5%) were satisfied in urban areas. Seven (3.9%) and 11(6.2%) respondents were dissatisfied with time spent with health workers in both rural and urban facilities respectively, while 59(16.7%) were neutral in both. Regarding comfort of waiting area 142(80.2%) and 141(80.2%) were satisfied in rural and urban areas respectively while a total of 68(20.1%) were neutral and none was dissatisfied.

Table 1. Socio-demographic distribution of respondents

Variable	Rural N(%)	Urban N(%)	Total	p-value
Age (years)				
18-25	58(32.7)	40(22.6)	98	0.400
26-32	77(43.5)	61(34.5)	138	
33-40	26(14.7)	31(17.5)	57	
41-47	19(10.7)	16(9.0)	35	
48-55	5(2.8)	10(5.64)	15	
>55	3(1.7)	8(4.5)	11	
*Mean(SD)	34.3(12.8)	35.5 (13.3)	*354(34.5±13.8)	
Treatment categories				
New cases	160(90.3)	175(98.8)	335	0.057
Retreatment	17(9.6)	2(1.1)	19	
Sex				
Male	89(50.3)	96(54.2)	185	0.454
Female	88(49.7)	81(45.8)	169	
Occupation				

Variable	Rural N(%)	Urban N(%)	Total	p-value
Civil servants	22(12.4)	27(15.3)	49	0.062
Private workers	95(53.7)	62(35)	157	
Unemployed	60(33.8)	88(49.6)	148	

For the cleanliness of the specimen bottle 138(77.8%) rural was satisfied compared to 148(83.6%) in urban areas and this was statistically significant, $p < 0.001$. Majority of the urban respondents 123(68.9%) were satisfied with respect offered by health workers compared to rural 114(64.4%), and this was also significant, $p < 0.000$.

Same number 161(90.9%) in rural and urban areas were satisfied with measures to assure privacy while 1(0.6%) rural and 5(2.8%) urban respondents were dissatisfied. Regarding providers skill, 136(76.8%) and 147(83.1%) rural and urban respondents were satisfied while

41(23.2%) and 30(16.9%) in rural and urban were neutral but none was dissatisfied with providers skill.

Concerning cost incurred and information given by health workers more urban respondents 5(2.8%) were dissatisfied compared to rural 2(1.1%) though not statistically significant $p = 0.378$.

Table 2b below showed that satisfaction was slightly higher in urban (82.8%) compared to rural (80.8%) respondents, while the overall satisfaction in this study was 81.8%.

Table 2. Respondents satisfaction with TB-DOTS services in rural and urban areas

Variable	Rural=177 N (%)	Urban=177 N (%)	Total	p-value
Appropriateness of working hours				
Satisfied	162 (91.5)	166 (93.8)	328 (92.7)	0.415
Neutral	15 (8.5)	11 (6.2)	26 (7.3)	
Dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	
Waiting time				
Satisfied	141 (79.7)	155 (87.6)	296 (83.6)	0.004**
Neutral	36 (20.3)	21 (11.9)	57 (16.1)	
Dissatisfied	0 (0.0)	1 (0.6)	1 (0.3)	
Time spent with Health worker				
Satisfied	138(77.9)	139(78.5)	277(78.3)	0.489
Neutral	32(18.1)	27(15.3)	59(16.7)	
Dissatisfied	7 (3.9)	11 (6.2)	18 (5.1)	
Comfort of waiting area.				
Satisfied	142(80.2)	141(80.2)	283(79.9)	0.148
Neutral	34(19.2)	30(16.9)	64(18.1)	
Dissatisfied	1 (0.6)	6 (3.4)	7 (1.9)	
Cleanliness of specimen bottle				
Satisfied	138 (77.9)	148 (83.6)	286 (80.8)	0.001**
Neutral	39 (22.0)	29 (16.4)	68 (20.1)	
Dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	
Respect by health worker.				
Satisfied	114 (64.4)	123 (68.9)	235 (66.4)	0.000**
Neutral	63 (35.5)	55 (31.1)	118 (33.3)	
Dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	
Measures for				

Variable	Rural=177 N (%)	Urban=177 N (%)	Total	p-value
privacy.				
Satisfied	161 (90.9)	161 (90.9)	322 (90.9)	0.194
Neutral	11 (6.2)	11 (6.2)	26 (7.3)	
Dissatisfied	1 (0.6)	5 (2.8)	6 (1.7)	
Provider's skill				
Satisfied	136 (76.8)	147 (83.1)	283 (79.7)	0.217
Neutral	41 (23.2)	30 (16.9)	71 (20.1)	
Dissatisfied	0 (0.0)	0 (0.0)	0 (0.0)	
Cost incurred				
Satisfied	150 (84.8)	144 (80.8)	294 (82.8)	0.454
Neutral	25 (14.1)	28 (15.8)	53 (14.9)	
Dissatisfied	2 (1.1)	5 (2.8)	7 (1.9)	
Information given by health worker				
Satisfied	149 (84.2)	141 (79.7)	290 (81.9)	0.378
Neutral	26 (14.7)	31 (17.5)	57 (16.1)	
Dissatisfied	2 (1.1)	5 (2.8)	7 (1.9)	

*Statistically significant $p \leq 0.005$

**Fisher's test, and Chi-square test

Table 2b. Overall satisfaction of respondents

Total 'satisfied' components from each variable (Respondents per subpopulation) x (number of variables utilized for satisfaction)		X 100
Rural (X_1) =	Urban (X_2) =	
$\frac{162+141+138+142+138+114+161+136+150+149}{177 \times 10}$	$\frac{166+155+139+141+148}{177 \times 10}$	$\frac{123+161+147+144+141}{177 \times 10}$
= 80.8%	= 82.8%	
Then $\frac{X_1 + X_2}{2}$		
$= \frac{80.8\% + 82.8\%}{2} = 81.8\%$		

4. DISCUSSION

The provision of a qualitative and efficacious Tuberculosis care especially in all DOTS accredited facilities is an important component of TB control strategy. This thus helps to reduce patient's dissatisfaction with DOTS which could cause them to default or possibly result in Multidrug Resistant TB (MDR –TB) if they stop, default, or abscond from care [7].

In this study the mean age of the respondents in rural and urban settings was 34.5 ± 13.8 years and 35.5 ± 13.4 years respectively with a combined mean of 34.9 ± 13.7 years. These findings were similar to mean ages of TB patients reported in Imo state which was 35.4 ± 14.7 , and Anambra 36.1 ± 13.3 years

respectively [20,21]. These findings corroborated the occurrence of Tuberculosis among the active populations and those who possibly engage in outdoor activities frequently [20-22].

It was also shown that the commonest category of patients seen at DOTS accredited centres were new case, that is 90.3% in rural and (98.8%) with a total of 335 while 19 were retreatment cases. This was similar to findings in Benin [22] and Ogbomosho [23] where there were more new cases compared to retreatment. There were more male respondents in both rural and urban DOTS centres with a total of 185(52.3%) males to 169(47.7%) females. This was similar to findings in Ogbomosho, Ilorin, Imo State, with more male cases compared to

females [23-25]. This male dominance could be because they are the outdoor worker, possibly active smokers and alcoholics or binge drinkers.

The study showed further showed that higher proportion of respondents in both rural and urban centre's 162 (91.53) and 166 (93.79) were satisfied with appropriateness of working hours, however, this was not statistically significant between the two sub populations. Also another higher proportion of respondents were satisfied with waiting time and time spent with health worker, however, one urban respondent was dissatisfied with waiting time, while 7 (3.95) and 11 (6.21) rural –urban respondents were dissatisfied with time spent with health worker.

These findings stipulates that patients who spent shorter time and within a time frame of working hours were more satisfied in tandem with findings in Sudan [26] that those TB patients who received services faster and within the early working hours were more satisfied with DOTS services. This study also stipulated that patients living in urban areas were more satisfied than those in rural areas. Furthermore, it was also found that respect offered by health workers in both subpopulations were also statistically significant. This finding was supported by longest et al. [11] that cordial patient – provider interactions, continuous quality of commodities, and services offered by a facility will attract and make patients adhere to medications. Also good provider-patient relationship will ensure regular adherence with appointments as the patients' would likely feel secured and respected irrespective of their health condition. The specimen bottles being neat will not only attract patient to its use but will also reduce artefacts, contaminants and laboratory discordant rates that may give false results [12].

Although this study found out that greater percentage of respondents in rural and urban were satisfied with measures to assure privacy, however one rural and 5 urban respondent's were not satisfied. This may be due to stigma, place of consultation or attitude of health workers [7] which might lead them to lose confidence in the health system that was meant to keep their records of illnesses confidential. This dissatisfaction may worsen default rate and even lead to MDR-TB [7]. In furtherance to this, privacy or confidentiality as well as attitude of health workers has been stated as important factors that ensures patients adherence to

therapy as well as satisfaction with healthcare [27].

In this study, while majority of respondents were satisfied with provider's skill and cost incurred, however, 2 rural and 5 urban respondents were dissatisfied with cost incurred. This may be due to the distance they travelled as a result of money spent on transport, water and refreshment at the facility. Other reasons may be due to purchase of adjunct drugs like Pyridoxine, multivitamins and cough syrup not covered as free provisions by DOTS implementers [28,29,30].

In this study therefore the overall satisfaction rate in rural areas was 80.8% compared urban which was 82.8%. This therefore implies that more work needs to be done especially in rural settings to ensure patients satisfaction as proxies for adherence and better outcomes. In furtherance to these, this study therefore concludes that patient's satisfaction is a panacea for DOTS implementation to succeed hence recommends that satisfaction could be improved by provision of multivitamins, transport, food among other requests. These patient-centred requests in addition to possibly delivering these medications to patient's abode, will also help in improving DOTS because it will encourage attendance and adherence with better outcomes.

CONCLUSION

Patient's satisfaction is a very important factor for successful implementation DOTS. When patient's are satisfied with DOTS implementation they will be adherent to therapy. We herein recommend that satisfaction could be improved by provision of patient-centred requests such as provision of ancillary drugs, transport, food and possible door-to-door delivery, among others to help improve DOTS.

CONSENT AND ETHICAL APPROVAL

Ethical approval for this study was sought and obtained from the Nnamdi Azikiwe University Teaching Hospital Ethics Committee (NAUTHEC) with number NAUTH/CS/66/Vol 9/75/2016/144. Verbal and written informed consent was obtained from the respondents after explaining the purpose of the study and the procedure without coercion, after which they signed as form of authorization.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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