



## **Finding the Gaps: Patients' Satisfaction with Structure, Process and Outcome Dimensions of Tuberculosis Care in Port Harcourt, Nigeria**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Authors INO, SOD conceptualization, methods, drafting, review and editing of the manuscript. Author SOD data analysis of the manuscript. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Tuberculosis (TB) is the tenth leading cause of death and is the leading cause of death from a single infectious agent. Quality of tuberculosis care and patients satisfaction of care received varies and remains a concern to all stakeholders.. The study aimed to assess patients satisfaction with structure, process and outcome dimensions of tuberculosis care in south-south Nigeria.

**Methods:** The descriptive cross-sectional study design was adopted for the study. Data collection was done using the Patient Satisfaction Questionnaire for measuring satisfaction with Quality of Care. A total of 102 patients participate. Convenience sampling of total population attending the TB clinic during the period of study was used. Data were analyzed using SPSS version- 21.

**Results:** Among 102 participants, 96.08% were found to be satisfied in structure dimension, 86.63% had good satisfaction with the process and 91.99% had were satisfied with their outcome.

**Conclusion:** Majority of the respondents had good satisfaction with the structure, process and outcome of care at the DOTS Clinic of the University of Port Harcourt Teaching Hospital.

**Keywords:** *Patients' satisfaction; quality of care; tuberculosis.*

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## 1. INTRODUCTION

The World Health Organization (WHO) recommends the Directly Observed Treatment Short-course (DOTS) strategy for control of TB, targeting to reduce TB deaths by 95% and new infections by 90% between 2015 and 2035 [1]. The strategy has been adopted globally and is considered the most appropriate and cost-effective approach for TB control especially in resource scarce settings [2]. Achieving these set goals is predicated upon an all-inclusive quality health care delivery system. The consensus has always been that quality care is at the core of service delivery whether the assessor is the health care provider, the user or the facility management staff [3]. Good quality health care therefore, has to be effective, efficient, accessible, acceptable, patient-centred, equitable, and safe [4]. Evidence from previous studies have revealed an immense variation in the quality of TB care (structure, process, outcome) available across healthcare facilities. This continues to affect the global TB control efforts, especially in resource-limited settings like in Nigeria [5,6].

The Nigerian National Health Policy [7] highlighted TB as a priority public health challenge and targetted reduction in the tuberculosis prevalence rate and the tuberculosis mortality rate in Nigeria by committing to provide universal access to high-quality, client-centred TB diagnosis and treatment services.

The Institute of Medicine defines health care quality as "the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and must be consistent with current professional knowledge" [8].

Avedis Donabedian model of quality of care consists of three key elements: structure or the resources available at a health facility, processes involving the interaction between providers and patients and outcomes or the consequences of care. [9] In other words, quality of care describes the extent to which health care services provided to individuals and patient populations improve desired health outcomes [7].

Patients' satisfaction is widely accepted as an independent and crucial assessment of the quality of care offered to patients. It is an invaluable tool that can give insights into daily hospital care. It provides genuine information on

real experiences as well as pinpoints what is generally important to the patients and their families. [10] The other benefits of knowing patient's satisfaction is that it can identify which aspects of a service need to be changed or improve on, assist organizations in identifying patients likely to drop out or have better treatment success and higher cure rates. [11,12,13] Also, it has been shown to influence healthcare utilization and can be a predictor of subsequent health-related behavior such as whether patients are willing to recommend their healthcare provider to others [14].

Regarding tuberculosis (TB) program services, outcome measures have often focused on mortality and microbiologic cure and most times neglect patients' perspectives such as satisfaction with care, which are crucial in influencing adherence and clinical outcomes [15,16].

Despite the increased focus on satisfaction as an important outcome measure, satisfaction has remained difficult to classify. While numerous satisfaction surveys have been developed, most with acceptable psychometric properties, the factors individual patients use to consider themselves satisfied remain largely varied or undefined. Consequently, studies measuring predictors of satisfaction have explained only a small portion of satisfaction variance, nearly always less than 20%, because patient's satisfaction is a subjective multi-dimensional health-care construct affected by many variables. [13] Nonetheless, there is an increased global call to correlate health care quality and patient satisfaction.

This study aimed to assess patients' satisfaction with quality of care at an out-patient tuberculosis clinic in a tertiary hospital in the South-South region of Nigeria.

## 2. MATERIALS AND METHODS

### 2.1 Study Area

This study was carried out in Port Harcourt, the capital of Rivers State, in the oil-rich South-South Nigeria. The city has a population of 3,171,076 according to the 2021 estimates [17]. The city has two tertiary health facilities and several other government primary and secondary health facilities as well as many private health facilities. The DOTS TB Clinic (Directly Observed Treatment, Short Course Clinic) is part of the

Outpatient department of the University of Port Harcourt Teaching Hospital (UPTH). UPTH is a tertiary health care facility with about 950 beds and serves as a major referral centre for Rivers and nearby South-South and South-East states [18]. The DOTS Clinic is a daily Monday to Friday outpatient clinic.

## 2.2 Study Population

The study recruited confirmed drug-susceptible TB cases (pulmonary and extra-pulmonary) who were on treatment at the adult DOTS Clinic of University of the Port Harcourt Teaching Hospital.

## 2.3 Sample Size

The minimum sample size of 102 was calculated using the sample size formula for a single proportion [19]

The computation is based on the prevalence of TB reported in Rivers state by Otukunfor et al., (2018) which revealed a 4.9% prevalence of TB in Port Harcourt, Nigeria.

## 2.4 Sampling Technique

Convenience sampling that recruited the total population of new and previously treated patients presenting to the clinic at the period of study was used until the required sample size was reached. The period of data collection was between July 2019 and December 2019.

## 2.5 Study Instrument/ Data Collection

Patient Satisfaction Questionnaire (PSQ-17) was used to assess the quality of care from the perspective of the patient. (adapted from Ameh et al., (2017) [20]. The PSQ-17 assesses multiple dimensions of patient satisfaction and includes general satisfaction, technical quality, interpersonal relations, communication, time spent with health providers; accessibility and convenience. The PSQ-17 instrument is reflective of Donabedian's Structure-Process-Outcome(SPO) theories and concisely measures patient satisfaction with dimensions of care for which SPO constructs are proposed. It has three main areas of assessment namely: Structure Measures, Process Measures, and Outcome measures, of which a 17-item scale was developed. Three (3) main questions were used to assess Structure, eight (8) main questions were used to assess Process and six (6)

questions were used to assess Outcome on a Likert scale rating of: Strongly disagree =1, Disagree =2, Not Sure =3, Agree =4, and Strongly agree =5. All items were scored from one to five (1-5) so that high scores reflect satisfaction. For the overall quality of care, the rating was on a score of 1(lowest quality of care) to 5 (highest quality). Furthermore, dichotomous data were created from the Likert scale scores with a mean score of  $\leq 3$  representing 'dissatisfaction' while a score of 4 and above ( $\geq 4$ ) represented 'satisfaction'.

## 2.6 Validity and Reliability of the Instrument

The instrument was pre-tested with 10 respondents at DOTS Clinic, Ozuoba Health Centre to ensure face validity of the data. The results of the pre-test correlated positively with expected results and so the instrument was considered reliable. The reliability of the scaled items on the study instrument was determined using Cronbach's  $\alpha$  (malpha). It was used to measure the internal consistency of the 17-item *Patient Satisfaction Questionnaire for measuring Satisfaction with Quality of Care*. The Item responses were considered to be consistent as we obtained a reliability score of 0.875 (95%CI: 0.820 - 0.920) according to Snoek, Skovlund & Pouwer [21].

## 2.7 Data Analysis

Data were extracted from the questionnaires into Microsoft Excel ® version 2010 where it was coded and cleaned, and then imported into the "IBM Statistical Package for Social Sciences (SPSS) v21 (United States) software for Data Analysis." Chi-square ( $\chi^2$ ) test analysis was performed to test for association between two or more categorical variables and their proportions (%) and to determine the level of statistical significance between the variables associated. Differences in continuous data and means were tested using the student t-test as appropriate. Bivariate analysis was performed using odds ratio. All ORs were reported with their 95% CI and corresponding p-values. An observation is said to be statistically significant if the "*p-value* is less than or equal to 0.05 ( $\leq 0.05$ )".

## 2.8 Study Strengths and Limitations

One strength of this study was the use of the patient satisfaction survey to evaluate the quality of care in our DOTS Clinic using Donabedian's

theory. Causal relationships between structure-process-outcome constructs could not be deduced because the study design was cross-sectional. Convenience sampling is of less statistical certainty so generalization of inference is limited.

### 3. RESULTS

Table 1 shows that 28.43% of respondents were in the age range of 30-39 years with the mean

age of  $30.31 \pm 10.93$  years. More than half (53.92%) of respondents were males. Singles were in the majority (65.69%), while 43.14% of respondents were or have attained tertiary level of education and 28.43% were students.

Table 3 shows that all the respondents reported being satisfied (scores 3 & 4) with all the structure-related dimensions of quality of care.

**Table 1. Socio-demographic characteristics (n=102)**

Characteristics	Frequency (n=102)	Percentage (%)
<b>Age</b>		
≤19	22	21.57
20-29	26	25.49
30-39	29	28.43
40-49	15	14.71
50-59	10	9.80
<b>Mean</b>	<b>30.31 ± 10.93 years</b>	
<b>Sex</b>		
Male	55	53.92
Female	47	46.08
<b>Marital Status</b>		
Single	67	65.69
Married	33	32.35
Widowed/Divorced	2	1.96
<b>Educational Level</b>		
Primary	18	17.65
Secondary	40	39.22
Post secondary	44	43.14
<b>Occupation</b>		
Student	29	28.43
Artisans	25	24.51
Civil Servant	14	13.73
Trading/Business	12	11.76
Contractor/Company worker	8	7.84
Health worker	5	4.90
House wife	3	2.94
Farming/Fishing	6	5.88

**Table 2. Clinical status**

Characteristics	Frequency (n=102)	Percentage (%)
<b>How long have you been diagnosed with TB (months)</b>		
0-5	71	69.61
6-10	27	26.47
>10	4	3.92
<b>Mean</b>	<b>4.13 ± 3.99months</b>	
<b>HIV Status</b>		
Positive	18	17.65
Negative	84	82.35

**Table 3. Participants' level of satisfaction with structure, process and outcome**

<b>Characteristics</b>	<b>Satisfaction with Structure (n=102)</b>	
	<b>Dissatisfied Scores 1-3</b>	<b>Satisfied Scores 4-5</b>
Staffing at the clinic	0 (0.0)	102 (100)
Drug Stocking at the clinic	2 (1.96)	100 (98.04)
Availability of equipments for tests and other examinations	4 (3.92)	98 (96.08)
Mean score	2(1.96)	100 (98.04)
<b>Characteristics</b>	<b>Satisfaction with Process (n=102)</b>	
	<b>Dissatisfied (Scores 1-3)</b>	<b>Satisfied (Scores 4-5)</b>
Ease of retrieving results of follow-up tests	13 (12.74)	89 (87.26)
Time spent with doctors and health workers during consultations	10 (9.90)	92 (90.10)
Follow-up care	15(14.71)	87 (85.29)
Professionalism at the clinic	2 (1.96)	100 (98.04)
Referral to specialists when the need arises	17 (16.66)	85 (83.34)
Friendliness of the staff	27 (26.47)	75 (73.53)
Defaulter tracing	14 (13.73)	88 (86.27)
Communication on medical care	11 (10.78)	91 (89.22)
<b>Mean Score</b>	<b>13.6 (13.37)</b>	<b>88.38 (86.63)</b>
<b>Characteristics</b>	<b>Satisfaction with Outcome (n=102)</b>	
	<b>Dissatisfied</b>	<b>Satisfied</b>
How do you feel about the tuberculosis program in general	9 (8.82)	93 (91.18)
How do you feel about the clinic to be able to recommend it to others?	2 (1.96)	100 (98.03)
Influence of care on your health	0 (0.00)	102 (100.00)
Impression on patients' waiting time	9 (8.82)	93 (91.18)
The medical terms used by the medical staff	21 (20.59)	81 (79.41)
How is your recovery process?	8 (7.84)	94 (92.15)
<b>Mean Score</b>	<b>8.2 (8.01)</b>	<b>93.8 (91.99)</b>

They were satisfied with staffing at the clinic, drug Stocking and availability at the clinic, availability of equipments for tests and other examinations with composite score for structure averaging 96.04%.

The participants assessed process-related dimensions of care viz; ease of retrieving results of follow-up tests, Time spent with doctors and health workers during consultations, Follow-up care, Professionalism at the clinic, Referral to specialists when the need arises, Defaulter tracing and Communication on medical care. They were most satisfied with professionalism of the doctors and nurses and

least satisfied with ability to refer them to another specialist when the need arises.

In assessing outcome related dimension of care, we looked at the influence of care on patient's health, impression on patients' waiting time and recovery process. All the participants were satisfied with the outcome of care they have received with satisfaction with influence of care on patient's health scoring 100%.

A statistically significant association was observed between educational status and satisfaction, as persons with a secondary level of education and below showed a high proportion of dissatisfaction (100% vs. 0%;  $p=0.03$ ).

**Table 4. Relationship between socio-demographic characteristics and overall satisfaction (Chi-Square & Bivariate Logistic Regression, using proportions)**

Socio-demographic characteristics	Composite Satisfaction Score		Total	Df	$\chi^2$ (p-value)	OR (95% CI)
	Poor Freq (%) n=8	Good Freq (%) n=94				
<b>Age</b>						
≤29	4 (50.0)	44 (46.81)	48 (47.06)	1	0.00	1.14
30 and more	4 (50.0)	50 (53.19)	54 (52.94)		(1.00)	(0.27-4.82)
<b>Sex</b>						
Male	4 (50.0)	51 (54.26)	55 (53.92)	1	0.00	0.84
Female	4 (50.0)	43 (45.74)	47 (46.08)		(1.00)	(0.19-3.57)
<b>Marital Status</b>						
Married	0 (0.0)	33 (35.11)	33 (32.350)	1	2.70	<i>Undefined</i>
Single (not in union)	8 (100.0)	61 (64.89)	69 (67.65)		(0.100)	
<b>Educational Status</b>						
≤Secondary	8 (100.0)	50 (53.19)	58 (56.86)	1	4.82	<i>Undefined</i>
Post secondary	0 (0.0)	44 (46.81)	44 (43.14)		(0.03)*	

\*Statistically significant ( $p < 0.05$ ); OR=Bivariate Logistic Regression; Undefined= OR cannot be determined due to an "0" value in the equation

#### 4. DISCUSSION

We documented that among 102 participants that took part in this study, 28.43% were in the age range of 30-39 years, with a mean age of  $30.31 \pm 10.93$  years. Mean age in our study, tallies with the mean ages in other Nigerian studies (34.5+-13.8) and (35.4+-14.7) [22,23]. It is an age long knowledge that TB is commoner among active age group who are equally sexually and socially active. What this means is that this age group have the tendency to indulge in alcoholism and smoking, unsafe sex and a high prevalence of HIV/AIDS. More than half (53.92%) of respondents were males, 65.69% were single, 43.14% had post-secondary education. Students and artisans constituted more than half of the respondents. Studies have shown that poor income, lower socio-economic status and little or no educational attainment are associated with increased risk of tuberculosis infection, recurrence and relapse [24]. We had a large percentage of singles in our study due to the fact that students especially post-secondary level students were in the majority. The proximity of the TB centres to tertiary educational centres in the state explains the large proportion of students. About a quarter of our participants (17.65%) were co-infected with HIV [25]. Worldwide, TB is the most common HIV- associated opportunistic infection and AIDS-related death. Also, progression from TB infection to active

disease is faster in HIV infected individuals and often exhibiting a higher tendency to poorer outcomes.

The results of this study show that with regards to the structural component of the Donabedian triad, 96.04% of our study participants were very satisfied with quality of care received after we assessed for staff strength, availability of drugs and equipment for tests and examination. This indicates that the facility is structurally equipped and functional. This could be due to the fact that the tertiary health facility is federal government owned and therefore well funded and supervised by the National tuberculosis program and partnering NGOs. Most studies reported good satisfaction with TB services but two studies from West and East Africa reported poor satisfaction [26,27].

In assessing the processes involved in patients care, 87.3% of patients were satisfied with the waiting time and 90% were satisfied with time spent consulting with the doctor. This result is in tandem with what was obtained in a similar study in south-east Nigeria [22] and Sudan [28] Psychologically, long waiting time before consultation is a demotivator to keeping hospital appointments and a major contributor to poor care seeking behavior of the people. Also reluctance to keep hospital appointments is a

correlate of treatment failure and possibly a slide towards drug resistant tuberculosis.

Friendliness of hospital staff had the lowest satisfaction rating (73%) in the service process component of our study. The lower rating of friendliness of staff agrees with reports from south-east Nigeria, Northern Nigeria and Uganda [23,29,26,30]. Anecdotal, in Nigeria, healthcare service providers particularly in public facilities tend to be less friendly towards their clients. They perceive their service as a favour to the clients, and not a duty. In trying to regulate the attitude of all service providers towards their clients, the federal government launched the SERVICON (service compact with all Nigerians) strategy. Healthcare provider-patient relationship is often identified as a predictor of patients' satisfaction with healthcare services. therefore, staff attitude is important in service utilization. Professionalism was scored very high (98.04%) in our study. as a tertiary hospital, the highest level of expertise and candour is expected from the TB centre much more because TB programme is vertically organised in partnership with donor funds. There is good evidence that the federal ministry of health and donor partners are consistent in their monitoring and supervisory roles. A study from East Africa, however reported a low scoring for professionalism but showed that participants were satisfied in the aspect of clinical consultation, time spent with the clinician, technical skills and communication with patients during consultation.[31,32].

A large proportion of the study participants rated medical care they received high. They were also satisfied with the way their medical conditions were discussed with them by the healthcare providers. On the contrary, in studying trends in patients satisfaction over 14-year period, a Finnish team noted a 9% decrease in patients' satisfaction [33].

This study also found that 91.99% of participants were satisfied with the outcome parameters. The findings in this study are in agreement with the reports of Gebrekidan et al [34] and Tobin-West et al [35]. Majority (91.2%) of our participants claimed they can recommend the clinic to friends and relations. In the same vein, a similar study in Pakistan reported that 85% of their study participants reported they can recommend the TB services to others [36] All our participants reported they were satisfied, as the services they received in our centre affected their health and quality of life positively. Our result is in line with

treatment outcome documented from Ethiopia [34]. They noted that 99.9% of participants in their study were either cured or completed their treatment.

From the findings in this study, it can be inferred that most of our participants were satisfied with the outcome of treatment they received in our TB facility which ultimately translates into perception of good quality of care. Our overall result of over 90% of our participants were very satisfied with all the component TB treatment services according to Donabedian (SPO) construct. Cazabon and colleagues [37], in order to address gaps in care cascade, reviewed scholarly studies on the quality of tuberculosis care in high burden countries. Their finding lent credence to our result that a high percentage of patients were very satisfied with the quality of care received at TB centres.

## 5. CONCLUSION

This study aimed to assess patients' satisfaction with quality of care at a tuberculosis clinic. Based on the findings in this study we conclude that majority of the respondents were satisfied with the structure, process and outcome of care at the DOTS clinic of University Port Harcourt Teaching, Port Harcourt.

## DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

## ETHICAL APPROVAL AND CONSENT

Ethical approval for the study was obtained from the Ethics Committee of the University of Port Harcourt (UPH/CEREMAD/REC/MM61/047). Signed informed consent was obtained from each respondent before they were included in the study. All personal information remained confidential and used strictly for the study.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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