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DEVELOPMENT OF AN INSTRUMENT TO MEASURE SATISFACTION OF HIV POSITIVE CLIENTS WITH HEALTH SERVICE IN HIV TREATMENT HOSPITALS IN NIGERIA

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ABSTRACT: Background: Having a satisfaction assessment tool that is reliable and valid is paramount in patient satisfaction research. **Objective:** To develop an instrument to assess the satisfaction of HIV-infected persons covering different aspects of health service delivery in Nigerian HIV treatment hospitals. **Materials and Methods:** The questionnaire items were developed from literature as well as from key themes identified by Nigerian patients as been most important in the delivery of high-quality care as reported in a systematic review. The following factors were assessed: construct validity, factorial validity, reliability, face and content validity, and practicality. Bishop Shanahan Hospital Nsukka evaluated the instrument's viability, and a tertiary healthcare facility validated it. Principal components and varimax rotation were utilized in factor analysis. Utilizing internal consistency and Cronbach's alpha, reliability was examined. Spearman's rho correlation was used to determine the convergence and discriminant validity. **Results:** A 10-item questionnaire was developed in a band score of 0-10 response options. '0' indicates complete dissatisfaction and '10' denotes complete satisfaction. Ninety questionnaires were collected for the pilot test while validation of the instrument was done with five hundred questionnaires. Two factors emerged from factor analysis: physicians, laboratory scientists and other service provisions', and 'pharmacists and nursing services' with a cumulative variance of 67.74%. Cronbach's alpha for the whole questionnaire was 0.821, and 0.899, 0.965 for the two factors, respectively. Both convergent and discriminant validity tests were satisfactory. **Conclusion:** This study developed a reliable and valid instrument for assessing patient satisfaction with health services in HIV treatment hospitals in Nigeria.

INTRODUCTION: There is a poor customer relationship and service delivery in the Nigerian service industry¹⁻⁷. This is also true in the health sector (hospitals)^{8,9}.

Patient satisfaction is seen as a measure of the outcome of health care service. It mirrors the ability of a provider to profitably provide care that meets clients' expectations and requirements^{10,11}.

Dissatisfaction with health service can lead to poor motivation and poor adherence to therapy. In HIV management, this could mean falling out of care and patients living a poor quality of life as a result of lack of care. Thus, quality of care continues to be a major concern for health care providers and a major focus for health services research.

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In Nigeria, many studies on patient satisfaction already exist¹²⁻²¹. Levels of satisfaction and associated factors indeed varied across measures, sub-groups of patients, clinics, regions, and health care systems, having a satisfaction assessment tool that is reliable and valid cannot be overemphasized. Njilele *et al* developed a valid and reliable satisfaction tool to be used in the evaluation of patient satisfaction with pharmaceutical services in HIV/AIDS clinics in Nigerian hospitals/clinics²². Another study developed and validated a satisfaction scale to evaluate patient satisfaction with pharmacy services in Nigerian hospitals²³.

These two studies concentrated on pharmacy/pharmaceutical services. Also, the former developed a measure to be used in HIV clinics while the latter utilized the whole outpatients in the clinic, regardless of the disease condition. No study has documented the development and validation of a tool to assess the satisfaction of HIV-infected patients with health services. Published works had documented the non-existence of a gold standard tool for measuring satisfaction with health services²⁴⁻²⁶. Also, a systematic review carried out on the satisfaction of Nigerian patients with health services reported the same finding²⁷. However, important themes regarded by patients for the delivery of quality care were identified in the review. This present study incorporated these key topics into the development of a satisfaction questionnaire to assess health service delivery in hospitals and clinics.

Objective of the Study: To develop and validate a questionnaire for measuring HIV patients' satisfaction with health services in Nigerian HIV treatment hospitals.

MATERIALS AND METHODS:

Questionnaire Development: The questionnaire items were formed from previously published works^{22, 25, 28} as well as from a recent systematic review²⁷. The review considered articles published on the satisfaction of Nigerian patients with health service. It considered the general patient population; however, this questionnaire was developed using HIV/AIDS patients as a case study. The themes identified as top priorities by patients were patient-staff relationship, clinic/hospital infrastructure, privacy/ confidentiality,

convenience as well as waiting time, quality and availability of service, cost of service and overall satisfaction. Except for cost of service, we included the other themes in the questionnaire development. Although the cost of service is an important theme identified, it appears to relate minimally to patient satisfaction²⁹. Furthermore, the cost of service in HIV/AIDS patients is highly subsidized, especially in low- and middle- income countries³⁰.

Contrary to some documented studies that utilized the Likert type of assessment, the questions were surveyed in a band score of 0-10 response options. "0" indicates complete dissatisfaction and "10" denotes complete satisfaction. A 12-item questionnaire was initially developed with two proposed dimensions. Namely: physician, laboratory scientist and other service provisions; pharmacy and nursing services. Questions to obtain patients' demographic data and clinical characteristics were also included.

Eligibility Criteria: We enrolled HIV-positive outpatients with an HIV/AIDS diagnosis, those who had been on Highly Active Antiretroviral Therapy (HAART) for at least three months before the start of the study, those that were at least 15 years old and those who could communicate in English.

Pre-testing of Questionnaire: The instrument was face validated by two physicians, four pharmacists, nursing staff and a statistician. The feasibility of the questionnaire was evaluated at Bishop Shanahan Hospital, Nsukka, a secondary health facility. The pre-test was done with ninety HIV-infected people. The researcher took note of all the difficulties and complaints made by the respondents.

Questionnaire Validation and Statistical Analysis: The modified instrument was validated in a tertiary health facility, University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla. The HIV clinic was established in March 2002. It runs every week, providing care and treatment to HIV-infected patients. The clinic operates from Monday to Thursday weekly. The clinic receives referrals from health facilities within and outside the state. A total of 500 respondents participated in the survey which was ten per cent of the total population.

This was in line with Nwana hypothesis who postulated that in a population of few thousands, 10% of the population is sufficient³¹. It took about 3 to 5 minutes to complete the questionnaire. The consented respondents were approached to fill in the questionnaire and confidentiality was assured to the participants. The collected, coded, and entered completed surveys were done using SPSS version 23. The lead researcher double-checked this to make sure it was accurate and consistent. The corrected item-total correlation for each item was calculated after item analysis. An item must have a corrected item-total correlation value of 0.3 or higher in order to be kept. Principal component analysis with Varimax rotation and Kaizer normalization was used to do exploratory factor analysis.

The number of elements that needed to be preserved was chosen using the criterion of Eigenvalue 1.0. An item must have a factor loading higher than 0.4 and no higher loading on any other factor in order to be kept in a component. Cronbach's alpha was used to determine the measurement's internal consistency dependability. To assess the construct validity of the instrument, convergent and discriminant validities were computed.

Ethical Consideration: This research work was approved by the research and ethics committees of both Bishop Shanahan hospital, Nsukka and the University of Nigeria Teaching hospital Ituku-Ozalla, Enugu. The approval number from the teaching hospital was NHREC/05/01/2008B-FWA00002458-IRB00002323. Informed consent was granted and respondents' confidentiality was maintained.

RESULTS:

Characteristics of Respondents: Most of the respondents were female (54.6%), between 15 and 44 years (80.8%), married (48.2%), had tertiary education (45.4%), were employed (63.4%) and were Christians (92.4%). Details are presented in **Table 1**. The majority of the respondents were in stage I of the HIV infection (99.3%). Many of them had viral loads below 20 copies/ml (88.8%), 77.8% were virally suppressed (i.e. viral load below 1000 copies/ml) and had good adherence (73.7%) **Table 2**.

TABLE 1: DEMOGRAPHICS, N = 500

Variables	n (%)
Sex	
Male	227 (45.4)
Female	273 (54.6)
Age (in years)	
15-24	101 (20.2)
25-34	172 (34.4)
35-44	131 (26.2)
45-54	69 (13.8)
55-64	20 (4.0)
≥65	7 (1.4)
Marital Status	
Single	215 (43.0)
Married	241 (48.2)
Widow(er), Divorced, Separated	44 (8.8)
Education	
No education	23 (4.6)
Primary	80 (16.0)
Secondary	170 (34.0)
Tertiary	227 (45.4)
Employment	
Employed	317 (63.4)
Unemployed	176 (35.2)
Pensioner	7 (1.4)
Religion	
None	10 (2.0)
Christianity	462 (92.4)
Muslim	28 (5.6)

TABLE 2: CLINICAL CHARACTERISTICS, N = 433

Variable	n (%)
Stage	
I	430 (99.3)
II	3 (0.7)
Viral Load (copies/ml)	
< 20	38 (8.8)
20 - <1000	299 (69.1)
>1000	96 (22.1)
Viral Status	
Suppressed	337 (77.8)
Unsuppressed	96 (22.2)
Adherence	
Good	319 (73.7)
Poor	114 (26.3)

Measurement Properties of the Newly Developed Questionnaire: The initially designed questionnaire comprised of 12 items, grouped in two proposed domains 'Physicians, Laboratory scientists and other service provisions', and 'Pharmacists and nursing services. Following the calculation of the revised item-total correlation for each item, two of the questionnaire's items were removed. This was because these items had correlation values below 0.3. **Table 3** Items 9 and 11 had values 0.290 and 0.281 respectively and

hence were not retained. The questionnaire was left with 10 items. Two factors/dimensions emerged after factor analysis with principal component and varimax rotation was carried out.

TABLE 3: ITEM-TOTAL STATISTICS

Items	Item-total correlation
How satisfied are you with your access to information and guidance on healthcare services and procedures?	0.675
How satisfied are you with the consultation, explanation, and guidance you have received from doctors?	0.651
How satisfied are you with the pharmaceutical services you have received from Pharmacists?	0.442
How satisfied are you with the nursing services?	0.477
How satisfied are you with the services of other healthcare workers such as Laboratory Scientists?	0.580
How satisfied are you with the clinic waiting time?	0.404
How would you rate the convenience in using medical services, such as laboratory tests?	0.599
How would you rate the inter-professional or inter-departmental collaborations in this clinic?	0.626
How satisfied are you with the responsiveness of healthcare workers to your questions and requests?	0.290*
How satisfied are you with the availability of your needed healthcare services?	0.627
How satisfied are you with the medical confidentiality and respect of patients' privacy in this clinic?	0.281*
How would you rate the clinic infrastructure and cleanliness of the environment?	0.618

* Items were deleted because item-total correlation was < 0.3

The factors accounted for 67.74% of the variance with the first item accounting for greater variance. The factor loadings of the first seven items were above 0.7. These loaded in the first dimension. The eighth item with a factor loading of 0.58 also was captured in the first dimension. Items 9 and 10 with a factor loading of above 0.9 loaded in the second dimension. The first factor talks about the services of doctors and laboratory scientists as well as other service provisions patients encountered during their clinic visits. These eight items in the first factor loaded under the dimension: Physician, Laboratory scientist and other service provisions. The last two items (items 9 and 10) loaded under the dimension:

Pharmacist and nursing services which dealt with the satisfaction with pharmaceutical and nursing services. The internal consistency was assessed by performing the Cronbach's alpha on each of the subscales as well as on the whole questionnaire items. The value of the whole questionnaire was 0.821. For the first domain, the Cronbach alpha value was 0.899 while the value was 0.965 for the second domain. **Table 4** presented the details of the factor analysis.

TABLE 4: ROTATED COMPONENT MATRIX OF THE 10 QUESTIONNAIRE ITEMS

	Component	
	1	2
How satisfied are you with your access to information and guidance on healthcare services and procedures?	0.826	
How would you rate the inter-professional or inter-departmental collaborations in this clinic?	0.816	
How would you rate the convenience in using medical services, such as laboratory tests?	0.790	
How satisfied are you with the availability of your needed healthcare services?	0.782	
How would you rate the clinic infrastructure and cleanliness of the environment?	0.782	
How satisfied are you with the consultation, explanation, and guidance you have received from doctors?	0.777	
How satisfied are you with the services of other healthcare workers such as Laboratory Scientists?	0.777	
How satisfied are you with the clinic waiting time?	0.580	
How satisfied are you with the Pharmaceutical services you have received from Pharmacists?		0.979
How satisfied are you with the nursing services?		0.970

Table 5 shows the construct validity in more detail. Items 2 and 3 from the first domain and items 9 and 10 from the second domain were the two pairs of items utilized to assess the construct's validity. Since the items from each domain are connected and are anticipated to depend on one another, convergence should be evident. On the other hand, since each item comes from a distinct domain, divergence is to be expected. Divergent validity was defined as levels of correlation ranging from 0 to 0.5, whereas convergent validity was defined as values of correlation ranging from 0.5 to 1.0. Items 9 and 10 got a correlation score of 0.933 whereas

items 2 and 3 had one of 0.653, indicating that these two pairings were genuine and convergent as expected. Items 2 and 9, 2 and 10, 3 and 9, and 3 and 10 all had correlation values of 0.142, 0.185, 0.166, and 0.192, respectively. These numbers represent discriminant validity and show that the items from the various domains were significantly

different from one another and independent of one another. Following validation, the questionnaire was expanded to contain 11 items by adding a general satisfaction question that was taken from another validated satisfaction survey²⁸. The resulting questionnaire is displayed in the appendix and was organized based on the two domains.

TABLE 5: CONVERGENT AND DISCRIMINANT CORRELATIONS

	Item 2	Item 3	Item 9	Item 10
Item 2 Pearson correlation Sig. (2-tailed)	1	0.653**<0.001	0.142**<0.001	0.185**<0.001
Item 3				
Pearson correlation	0.653**	1	0.166**	0.192**
Sig. (2-tailed)	<0.001		<0.001	<0.001
Item 9				
Pearson correlation	0.142**	0.166**	1	0.933**
Sig. (2-tailed)	<0.001	<0.001		<0.001
Item 10				
Pearson correlation	0.185**	0.192**	0.933**	1
Sig. (2-tailed)	<0.001	<0.001	<0.001	

** Correlation is significant at the 0.01 level (2-tailed). Item 2=How would you rate the inter-professional or inter-departmental collaborations in this clinic. Item 3=How would you rate the convenience in using medical services, such as laboratory tests. Item 9=How satisfied are you with the pharmaceutical services you have received from Pharmacists. Item 10=How satisfied are you with the nursing services?

DISCUSSION: We developed a questionnaire to assess HIV/AIDS' patients' satisfaction with health service in Nigerian hospitals and clinics. The instrument is valid and reliable, and the first of its kind to be developed for use in Nigerian HIV treatment hospitals. Our study was unique in that different aspects of health services were considered. The role of doctors, pharmacists, nurses and laboratory scientists in the management of HIV-infected persons cannot be over-emphasized. The results of the development process showed that the scale is internally reliable and construct valid. The factor analysis agrees with the factorial validity of this questionnaire. Two factors/dimensions that finally emerged were the same as the originally proposed dimensions. The findings of the construct validity indicated that the questionnaire items correctly assessed what they are meant to evaluate.

Our analysis also showed that each of the domains was reliable as shown by the high value of the Cronbach's alpha (0.899, 0.965 respectively). Cronbach's alpha values between 0.7 and 0.9 are generally regarded as best because they showed that the items asked related questions good enough to form a scale^{22, 32}. Since the items of the questionnaire were obtained from the predominant themes found in a systematic review of Nigerian

patients with health services, the instrument can be adapted to suit assessment in other disease states such as cancer, hypertension and diabetes to mention but a few. Different health care professionals such as doctors, pharmacists, nurses and laboratory scientists, working in HIV/AIDS clinics will find this tool useful in the periodic evaluation of the quality of services they render to their clients/patients. The fewer number of items compared to other validated instruments will encourage routine use of the instrument in Nigerian hospitals and clinics. Other sub-Saharan African countries which share similar health, social and economic characteristics with Nigeria will also find the new tool beneficial in their healthcare industry.

Limitations: The possibility of response bias cannot be ruled out since the respondents might fear that their providers might not be happy with them if they truly answer the questions in the questionnaire. Validation was done in one setting only which may or may not be a representative of the populace. There is a need to improve the generalizability and validity of the newly developed tool by testing it in different populations and settings. The questionnaire is limited only to those who understand English. The interviewer-administered nature of the tool also increases the possibility of response bias by the respondents.

CONCLUSION: The instrument developed is shown to be valid and reliable to be used in Nigerian hospitals and clinics. With little modification, the questionnaire can be adapted for use in the assessment of patient satisfaction with health services in different disease states. More research is required to increase the richness of the questionnaire.

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