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RESEARCH ARTICLE

Development of a patient satisfaction questionnaire for HIV/AIDS patients in Nigeria

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Abstract *Objective* The aim of this study was to develop and validate a questionnaire for assessing HIV-infected patients' satisfaction with pharmaceutical care received in Nigerian HIV clinics. *Method* Questionnaire's items were selected based on similar published studies and designed on a 5- point Likert response scale. Face and content validity, feasibility, factorial validity, reliability, and construct validity were evaluated. The instrument's feasibility was assessed in a secondary health care facility (St. Charles Borromeo Hospital Onitsha) and validated in a tertiary health care facility (University of Nigeria Teaching Hospital Enugu). Factor analysis used principal components and varimax rotation. Reliability was established using internal consistency with Cronbach's alpha. Convergent and discriminant validity were determined using Spearman's rho correlation. *Results* A self-administered 16-item questionnaire in 5-point Likert response scale format was developed. Questionnaire evaluated cumulative experience of patients with comprehensive pharmaceutical care practice in pharmacies of HIV clinics. Eighty questionnaires were collected for pilot test while four hundred questionnaires were retrieved for the validity test. Factor analysis resulted in four factors: 'Interpersonal/Professional relationship with pharmacist', 'patient counseling', 'drug information' and 'managing therapy', with a cumulative variance of 56.7%. Cronbach's alpha for the whole questionnaire was 0.85, and 0.81, 0.66, 0.67 and 0.72 for the four factors, respectively. Four items used for convergent and discriminant validity showed convergence between the related items and variance between the unrelated items. *Conclusion* The questionnaire developed is a reliable and valid instrument for assessing patient satisfaction with pharmaceutical care in HIV clinics in Nigeria. Further research is needed to expand the instruments' robustness.

Keywords HIV · Patient satisfaction · Pharmaceutical care · Questionnaire

Impact of findings on practice

- This developed questionnaire would point out areas of pharmaceutical care in which patients are dissatisfied.
- Such information would enable pharmacists to know the areas of pharmaceutical care in which they are lacking and which they need to improve on.

Introduction

Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) is a major public health problem all over the world. The greatest burden of the HIV/AIDS epidemic is felt in sub-Saharan Africa [1]. In 2007, this region contained an estimated 68% of all people living with AIDS and 76% of all AIDS deaths [1]. More importantly, Nigeria is among the first three countries with the largest population of HIV patients in the world [2]. Providing care to patients infected with HIV can be a challenge due to the complexity of the disease state and the increasing use of multiple drug regimens, which have complicated dosing and administration requirements. Additional agents are also often prescribed for prophylaxis and treatment of opportunistic infections associated with HIV. Due to the complexity of these drug regimens, there

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is possibility for medication errors, adverse outcomes and medication non-adherence which worsen HIV prognosis. The provision of pharmaceutical care could help to avert these problems. Pharmaceutical care is defined as the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve the patient's quality of life [3]. It is a patient-centred care, which is associated with improved clinical, economic, and humanistic outcomes. Pharmaceutical care is evolving in Nigerian health care setting [4], a situation which might not be different in other sub-Saharan African health care settings.

Patient satisfaction is a key factor in quality assessment of the health care systems [5] and has been categorized as an important humanistic outcome measure in pharmaceutical care. Various authors have given different definitions to patient satisfaction. Gourley et al. [5] defined it as a predictive measure of the probability that a patient will continue to use the service of a particular provider, while Schommer and Kucukarslan [6] considered it a personal evaluation or appraisal of a service or product. Research on patient satisfaction with pharmacy services started about 30 years ago and a significant volume of literature have been generated. Although survey instruments to assess patient satisfaction with pharmacy services have been developed, validated and used in developed countries [5–10], the lack of suitable instruments is still a problem in developing countries like Nigeria. Satisfaction instruments intended to be used in developed countries may not be suitable for use in developing countries since there is an enormous disparity in practice standards between developing and developed countries. Specifically, job description of Nigerian hospital pharmacists in public health sectors is mainly provision of traditional pharmacy services of drug procurement and supply. As such, the standard of practice is lower in Nigeria compared to developed countries. Therefore, there is need to develop patient satisfaction questionnaire that captures the uniqueness of the practice environment.

Aim of study

The aim of this study was to develop and validate a questionnaire for assessing HIV-infected patient' satisfaction with pharmaceutical care provided in Nigeria's HIV/AIDS clinics.

Method

Development of questionnaire

The questionnaire was developed from previously published questionnaires for assessing patient's satisfaction with pharmaceutical care in both community and hospital pharmacies [5, 7–10]. While some of the previous questionnaires used a five-choice assessment response scale with an assigned score from 5 = excellent to 1 = poor, others used a five-point Likert scale with scores from 5 = strongly agree to 1 = strongly disagree, to score respondents' answers. Although the excellent-to-poor response scale has been recommended for use in measuring satisfaction with medical encounters [11], the five-point Likert design was used after due consideration of the Nigerian respondents. Given the generally known low literacy level of people in the area of study, it was considered that statements of opinions (in Likert scale format) would be better understood and answered than questions which would require respondents to rate specific aspects of pharmaceutical care. Nevertheless, some items from questionnaires that used the excellent-poor scale were rephrased by the researchers from questions to statements of opinion in order to suite the five-point Likert scale. For example, an item, "How would you rate the courtesy and respect shown to you by the pharmacy staff?" was modified to "You are shown respect and courtesy by the pharmacy staff. Most of the previous works on patient satisfaction dealt with patient satisfaction with pharmaceutical care in general [5, 7, 8, 10]. One of the works specifically assessed HIV-infected patient's satisfaction with pharmaceutical care [9]. This new questionnaire focused on pharmaceutical care requirements for HIV-infected individuals, and was adapted to suite the specific pharmaceutical care services that are expected to be rendered to this group of patients as stipulated by the Global HIV/AIDS initiative Nigeria (GHAIN) guidelines on the role of pharmacists in the care of patients with HIV infections [12]. Adaptation process was carried out by one of the author who has been involved in pharmaceutical care training programme for pharmacists working in some HIV clinics in Nigeria and thus has vast and hands-on experience on the topic especially in relation to the Nigerian unique practice setting. A 23-item questionnaire was initially designed with three proposed dimensions namely (1) Interpersonal/professional relationship with pharmacists, (2) Evaluation of antiretroviral and opportunistic infections regimens by pharmacists, and (3) Patient education and counseling. Questions to obtain patient demographic data were also included.

Inclusion criteria

Participants included in the study were HIV positive outpatients diagnosed of HIV/AIDS, those that were placed on Highly Active Antiretroviral Therapy (HAART) for at least 3 months prior to the study, patients that were within the ages of 15 and 65, and those that could understand English language.

Pre-pilot test

Survey instrument was face validated independently by six lecturers of the department of Clinical Pharmacy and Pharmacy Management, University Nigeria Nsukka, two pharmacists trained in the care of HIV-infected patients and a statistician. The instrument's feasibility was assessed in a pre-pilot study carried out at St. Charles Borromeo Hospital Onitsha, a secondary health care facility. St Charles Borromeo hospital is situated in Onitsha, which is the major commercial town in Anambra State. The HIV/AIDS treatment centre started in 2003 and is run by Global HIV/AIDS Initiative Nigeria (GHAIN), a non-governmental organization which works in collaboration with United States AID (USAID). Copies of questionnaire were distributed purposively to 107 patients after receiving care by two of the authors. They took note of the questions asked by respondents concerning the instructions, difficulty of understanding and answering questions as well as their comments on the length of the questionnaire.

Pilot test

Modified questionnaire was thereafter validated in University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla. UNTH is a tertiary hospital and is located in Ituku-Ozalla in Enugu State. The HIV clinic of the hospital was started in 2002 by the Federal Government of Nigeria (FGN) and later taken over in 2008 by the United States President's Emergency Plan for AIDS Relief (PEPFAR). A total of 400 participants participated in the survey. Using an estimated population of 3,000 and assuming level of significance of 5 at a 95% confidence level, a desired sample size of 353 was estimated to be sufficient for the survey [13]. An additional 13% of participants were included to account for potential refusals, thus making the number to 400 respondents. Retrieved questionnaires were coded and entered into SPSS 14 (Chicago, IL). They were double checked for consistency with the hard copy by one of the investigators.

Item analysis was performed. The corrected item-total correlation of each item was calculated. The condition for an item to be retained was a corrected item-total correlation value of 0.3 or higher. In order to establish the components or factors in the instrument, factor analysis was performed using principal component analysis, employing Varimax rotation with Kaizer normalization. The missing values in the factor analysis were handled using list wise deletion. A criterion of Eigenvalue ≤ 1.0 was used to determine the number of factors to be retained. For an item to be retained in a component, it must have a factor loading higher than 0.4, and no higher loading on another factor. Thus, components were composed of items with their highest factor loadings on the same factor. Reliability of the whole instrument and the various factors was assessed using Cronbach alpha. To assess construct validity, two pairs of items were chosen from two different factors or sub-scales [14]. The items of each pair had been subjectively observed by the researchers to be related to and dependent on each other, while the items of the different pairs were not related. Convergent and discriminant validities of these items were then computed to determine the validity of the instrument's construct.

Ethical consideration

Appropriate approval was obtained from the Ethical Review Committees of St Charles Borromeo hospital and University of Nigeria Teaching Hospital. Informed consent was obtained. Participants' data were kept confidential.

Results

The initially designed questionnaire was made up of 23 items, grouped in three proposed dimensions—'Interpersonal/professional relationship with pharmacists', 'Evaluation of antiretroviral and opportunistic infections regimens by pharmacists', and 'Patient education and counseling'. Three items in the questionnaire were deleted after the face validation as they were judged either inappropriate or unnecessary. This exercise left the questionnaire with 20 items. During the pre-pilot study, only 75% of the patients approached to fill the questionnaire agreed to participate. Some respondents asked for further explanations regarding some questions, while a few complained about the length of the questionnaire. Some items were rephrased after pre-pilot testing based on the comments of the respondents.

In the pilot phase (conducted in UNTH), the response rate was 90.1%. About 52% of the participants were males while 48% were females. Average age of the study population was 37 ± 10 years. Majority of the participants had either secondary school education (40%) or university education (41%). The median duration that the participants had been on antiretroviral therapy at the clinic was 24 months. Computation of the corrected item-total correlation for each item resulted in the deletion of four items which had correlation values of <0.3. Table 1 shows the computed item-total correlation of the questionnaire items. Items 2, 5, 7 and 12 had values of 0.282, 0.088, 0.183 and 0.215 respectively, so were not retained. This left the questionnaire with 16 items. Factor analysis with principal component and varimax rotation was performed on the 16 remaining items. Four factors or dimensions emerged. These four factors accounted for 56.7% of the variance with the first factor accounting for a greater variance. Items 1–4 had a factor loading >0.70 in the first factor, and thus

Table 1 Item-total statistics

Items	Item-total correlation
1. Has an excellent professional relationship with you	0.502
2. Communicates with you in the language you best understand	0.282*
3. Spends as much time as you need with you	0.500
4. Is always available and answers your questions well	0.560
5. You have privacy in your conversations with the pharmacist	0.088*
6. You are shown courtesy and respect by the pharmacy staff	0.513
7. Evaluates your medication plan/prescribed drugs before giving you	0.183*
8. Asks questions about your previous illnesses and medications taken	0.477
9. Works together with you to choose a medication schedule that is most convenient for you	0.367
10. Always determines how much knowledge/information you have about the HIV disease and your medications	0.487
11. Informs you of the purpose of your medications	0.353
12. Instructs you on how to take your medications	0.215*
13. Provides you with written information about your drugs and disease	0.470
14. Constantly emphasizes on the importance of taking your medications as prescribed (Adherence)	0.390
15. Gives you information about the results to expect from your drug therapy	0.445
16. Advises you about problems that might occur with your medications (side effects)	0.584
17. Advises you on the types of food you should eat (nutrition)	0.473
18. Gives you information on some drugs and other things to avoid while on your medications	0.400
19. Always seeks to know if you have any problems related to your medications	0.523
20. Renders sufficient help when you have problems related to your medications	0.580

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

composed the first scale. Items 10-14 had a factor loading of >0.5 in the second factor. The third factor had three items (7–9) with a factor loading of >0.7 while the fourth factor was made up of four items (5, 6, 15, 16) with a factor loading of >0.5. The first factor (items 1–4) dealt with aspects concerning patients' relationship with pharmacists. These items loaded under the dimension ' Interpersonal/Professional relationship with pharmacists' as in the older classification. As a result, the above label was maintained for the first scale. The second, third and fourth factors were labeled 'Patient counseling', 'Drug information' and 'Therapy management' respectively after qualitatively examining the items in each factor. The final reliability coefficient of the whole questionnaire was 0.85. The Cronbach values for the four scales were: Interpersonal/Professional relationship with pharmacists—0.81, Patient counseling—0.66, Drug information—0.67, and Therapy management—0.72. Details of the factor analysis are shown in Table 2.

Details of the construct validity are presented in Table 3. The two pairs of items used to determine the validity of construct were items 2 and 3 from the first scale, and items 15 and 16 from the fourth scale. The items from each scale are related and expected to be dependent on each other, so should have convergence. On the other hand, items from the different scales are quite independent and divergence is expected. Correlation values ranging from 0 to 0.5 were set to indicate divergent validity while values ranging from 0.5 to 1.0 would indicate convergent validity. Items 2 versus item 3 had a correlation value of 0.667, while items 15 and 16 had a value of 0.861, thus these two pairs had a convergent validity as expected. The correlation values of items 2 and 15, 2 and 16, 3 and 15, and 3 and 16 were 0.313, 0.298, 0.350, and 0.315 respectively. These values signify discriminant validity, showing that the items from the different scales were significantly different and were independent of each other.

An overall satisfaction item obtained from an already validated satisfaction questionnaire [15] was added to the questionnaire after the validation process, bringing the total number of items to 17.

The final questionnaire was arranged based on the different factors and is shown in the "Appendix".

Discussion

This study aimed to develop a valid and reliable questionnaire for assessing HIV-infected patients' satisfaction with the pharmaceutical care services rendered in HIV/AIDS treatment centres in Nigeria. To the best of our knowledge, this questionnaire is the first of its kind developed to be used in Nigerian practice setting. Some items from previous satisfaction questionnaire were modified to simple sentences that Nigerians could understand. The few items in the questionnaire will also facilitate administration and scoring as well as minimal running cost.

The results from the development process showed that the questionnaire is valid and reliable. Specifically, factor analysis supported the factorial validity of this questionnaire. The factors/dimensions brought about by the factor analysis were similar to those proposed in the originally designed questionnaire. It was also observed that this questionnaire had similar factors with previously validated satisfaction questionnaires for assessing pharmaceutical

Table 2 Rotated factor loadings for the 16 questionnaire items

	1	2	3	4
1. Has an excellent professional relationship with you	0.740			
2. Spends as much time as you need with you	0.768			
3. Is always available and answers your questions well	0.782			
4. You are shown courtesy and respect by the pharmacy staff	0.710			
5. Asks questions about your previous illnesses and medications taken				0.562
6. Works together with you to choose a medication schedule that is most convenient for you				0.663
7. Always determines how much knowledge/information you have about the HIV disease and your medications			0.723	
8. Informs you of the purpose of your medications			0.716	
9. Provides you with written information about your drugs and disease			0.713	
10. Constantly emphasizes on the importance of taking your medications as prescribed (Adherence)		0.559		
11. Gives you information about the results to expect from your drug therapy		0.546		
12. Advises you about problems that might occur with your medications (side effects)		0.585	0.494	
13. Advises you on the types of food you should eat (nutrition)		0.589		
14. Gives you information on some drugs and other things to avoid while on your medications		0.662		
15. Always seeks to know if you have any health problems related to your medications		0.467		0.674
16. Renders sufficient help when you have problems related to your medications		0.491		0.708

Table 3 Non-parametric (convergent and discriminant) correlations

	Item 2	Item 3	Item 15	Item 16
Item 2	1.000	0.667	0.313	0.298
Item 3	0.667	1.000	0.350	0.315
Item 15	0.313	0.350	1.000	0.861
Item 16	0.298	0.315	0.861	1.000

care services [5, 8, 10]. The results of the construct validity showed that items in the questionnaire rightly assessed what they were intended for. With respect to the reliability of the questionnaire, Cronbach's alpha value was high (0.85). It is generally accepted that Cronbach's values between 0.70 and 0.90 are regarded as best because they indicate that items are sufficiently related to form a scale [16].

Other countries in sub-Saharan Africa could find this questionnaire useful since there are socio-demographic and economic similarities between Nigeria and these sub-Saharan African countries. The developed instrument would form a reliable work tool for researchers to advance patient satisfaction studies in Nigeria and possibly in sub-Saharan African countries. It might aid pharmacists practicing in these regions of the world to evaluate and improve pharmaceutical care rendered to HIV-infected patients. The need for such feedbacks is important for pharmacists working with HIV-infected patients since good patient-provider relationship has been shown to improve adherence [17]. The issue of adherence to antiretroviral therapy for the African region is so important since it is recognized as the second strongest predictor of progression to AIDS and death, after CD_4 count [18, 19]. In addition, the greatest burden of the HIV/AIDS epidemic is felt in sub-Saharan Africa [1].

There are some limitations in this study that need to be mentioned. In the facilities where the questionnaire was administered, the pharmacists introduced the researchers to the patients and helped in its administration. There is the possibility that with the presence of the pharmacists, patients might have been limited in expressing their views about the care provided, and as such respondents may have tried to portray themselves in a more favorable light. This questionnaire is a newly developed instrument in this region, therefore it is important to explore its validity by re-testing it in different populations of Nigeria. Lastly, this instrument being self-administered is limited to educated people that could understand English.

Conclusion

This study developed a questionnaire—the first of its kind to be used in Nigerian practice setting. Results from the development process indicate that questionnaire is valid and reliable, and so might be a valuable instrument for assessing patient satisfaction with pharmaceutical care in Nigeria' HIV clinics. Further research is needed to expand the instruments' robustness.

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Conflicts of interest The authors declare no conflict of interest.

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Appendix

See Table 4.

Table 4 A questionnaire for assessing patient satisfaction with pharmaceutical care services

S/N	The pharmacists	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
A. Interpersonal/professional relationship with pharmacists						
1	Has an excellent professional relationship with you					
2	Spends as much time as you need with you					
3	Is always available and answers your questions well					
4	You are shown courtesy and respect by the pharmacy staff					
B. Patient counseling						
5	Constantly emphasizes on the importance of taking your medications as prescribed (Adherence)					
6	Gives you information about the results to expect from your drug therapy					
7	Advises you about problems that might occur with your medications (side effects)					
8	Advises you on the types of food you should eat (nutrition)					
9	Gives you information on some drugs and other things to avoid while on your medications					
C. Drug information						
10	Always determines how much knowledge/information you have about the HIV disease and your medications					
11	Informs you of the purpose of your medications					
12	Provides you with written information about your drugs and disease					

Table 4 continued

S/N	The pharmacists	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
D. Managing therapy						
13	Ask questions about your previous illnesses and medications taken					
14	Works together with you to choose a medication schedule that is most convenient for you					
15	Always seeks to know if you have any health problems related to your medications					
16	Renders sufficient help when you have problems related to your medications					
E. General satisfaction						
17	I am happy with the service provided in the pharmacy					

This assessment asks your opinion about the pharmacist that attended to you. Please answer all the questions. Choose the most appropriate answer in the different column