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Pharmaceutical Care Service Delivery: Perspectives of Patients on Long Term Antiretroviral Therapy in a Nigerian Tertiary Healthcare Facility

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ABSTRACT

Objectives: Pharmaceutical care is an integral component of antiretroviral therapy which involves value added services that involve provision of medication information, proper usage, storage, side effects, prevention of drug interactions, identify and resolve drug therapy problems and support adherence. These services provide valuable contributions to the achievement of better clinical outcomes, adherence and improve quality of life. Antiretroviral therapy comes with significant risk of side effects, potential drug interactions, adverse reactions and complications from comorbidities. So in long term therapies pharmacists have the responsibility to identify and resolve drug therapy problems as well as provide information and respond to patient concerns. It is therefore important to assess patient satisfaction as an indicator of the quality of pharmaceutical care. This study therefore aimed to assess satisfaction with pharmaceutical care among patients on long term antiretroviral therapy. **Methods**: The pharmaceutical care satisfaction questionnaire consist of twenty seven items was adopted from previous studies with some modifications (Cronbach alpha = 0.855). The items are subdivided into three sections namely – therapy management (14 items), interpersonal relationship with pharmacists (9 items) and general satisfaction (4 items). The items which were rated on five point Likert scale and scored as poor (1), fair (2), good (3), very good (4) and excellent (5). The questionnaire was administered on patients selected by simple random sampling method. Mean item score was calculated and interpreted as 1.0 – 1.80 (poor), 1.81 – 2.60 (fair), 2.61 – 3.40 (good), 3.41 – 4.20 (very good) and 4.21 – 5.0 (excellent) satisfaction. An average score of 3.41 and above representing 80% on the scale was considered satisfaction. Chi square test was used to determine association between satisfaction and demographic factors. P value <0.05 was set for statistical significance. **Results**: Majority of respondents were females (54.7%) and most had either primary or secondary level education (77.3%). The mean age was 39.1 ± 10.7 years and has been on antiretroviral therapy for 4.7 ± 2.7 years. Satisfaction was found to be adequate in more than two thirds of patients with respect to therapy management (73%), interpersonal relationships (71.5%) and general services (76.2%). Satisfaction was significantly associated with gender (p=0.007), age (p=0.031) and marital status (p=0.005). **Conclusion**: There is need to improve pharmaceutical care service delivery as significant proportion of patients remain with suboptimal satisfaction.

Keywords: *HIV/AIDS, pharmaceutical care, satisfaction, antiretroviral therapy, determinants*

INTRODUCTION

The global population of patients living with HIV/AIDS is estimated to be about 37.7 million of which only 28.7 million are currently on highly active antiretroviral therapy [1]. The increasing access to long term antiretroviral therapy has not only reduced mortality and prevented opportunistic infections but also resulted in immune reconstitution and improved quality of life among patients [2,3]. Access to antiretroviral still lags behind in many developing countries where those on therapy is about 76% of patients living with the virus [4,5]; this lack of treatment pose serious public health challenge in reducing new infections among the most vulnerable segments of the population [6,7]. Recent epidemiological evidence indicate that Nigeria remain a major contributor to HIV/AIDS burden in sub Saharan Africa with a crude prevalence rate of 1.4% of adult population [8]. Over the last decade access to antiretroviral therapy has significantly improved, although many people living with the virus are not on therapy, particularly in rural areas [9,10,11]. The recent HIV/AIDS indicator survey by Nigeria's national bureau of statistics showed more women are on antiretroviral therapy [12] and also highlighted problems posed by gender disparity in access to treatment [13,14].

Antiretroviral therapy require regular medication refills, adherence to therapy and prompt response to reported side effects and/or adverse drug effects of drugs in order to achieve optimal clinical outcomes [15,16,17]. This routine visits to the pharmacy units provides opportunity for continuous pharmaceutical care services which includes medication counseling, side effect reporting, drug information, adherence support as well as resolving patients concerns about their medication therapy. The discharge of these pharmacist led services, personal relationship with patients, response to questions, maintenance of privacy and individualization of care must not only be of high professional standards, but also engender a sense of satisfaction with service delivery experience [18,19].

Satisfaction has been regularly used as one of many measures of quality and performance assessment as it is a known predictor of adherence to therapy, patient retention and better clinical outcomes [20,21,22]. There are multiple benefits of satisfaction with pharmaceutical care some of which include higher medicine refill rates, trust in pharmacists and improved quality of life [23]. This is in addition to reduction in drug related mortality, early identification of drug therapy problems [24,25], lower rate and duration of hospitalization [26] as well as adherence to follow up care and clinic appointments [27]. Several studies have also highlighted the fact that satisfaction is also associated with lower incidence of opportunistic infections [28,29], higher CD4 count and lower viral load [30,31], all of which are related to better adherence to therapy.

These benefits of satisfaction with pharmaceutical care has also been reported with long term management of many other chronic diseases [32,33,34]. Furthermore, regular interaction with patients enable pharmacists to identify potential medication errors and drug interactions, advise patients on proper medication storage and use, recommend safe over the counter medications and help reduce cost of care. This is particularly important among patients who are being treated for chronic diseases alongside antiretroviral therapy [35,36]. The results of satisfaction with pharmaceutical care among patients on long term therapy have been mixed in Nigeria [29,37] like in many other developing countries [23,38]. The major aim of this study is therefore to assess patient satisfaction with pharmaceutical care and its associated factors among patients receiving long term antiretroviral therapy.

MATERIAL AND METHODS

Study setting: The study was conducted at the antiretroviral clinic of the State specialist hospital Maiduguri, Borno State.

Study design: This was cross-sectional survey study using a twenty seven item pharmaceutical care satisfaction questionnaire adapted from previous studies.

Sample size/sampling: The sample size of 357 was calculated using Raosoft calculator available at http://www.raosoft.com/samplesize.html at 95% confidence interval, 5% error margin and proportion of 50% based on the number of patients on antiretroviral therapy at the facility. A 10% attrition rate was factored into the final sample size. The respondents were selected before regular pharmaceutical care interactions with pharmacists using simple random method after obtaining verbal consent.

Eligibility criteria: Patients must be ≥18 years of age and have been antiretroviral therapy for ≥ 1 year at the time of survey. Patients who were pregnant or breast feeding were excluded from the survey.

Questionnaire/administration: The pharmaceutical care satisfaction questionnaire used in this study was adapted from previous studies [29,39] with some modifications (Cronbach alpha = 0.855). The instrument consists of 27 items divided into three sections. The first section consists of 14 items related to therapy management, while section two is for interpersonal relationships between pharmacist and patient (9 items) and section three is for general satisfaction (4 items). The items were rated on a five point Likert scale and response scored as poor (1), fair (2), good (3), very good (4) and excellent (5). The questionnaire was administered by trained research assistants during routine refill of

medicines over a three month period (September – November, 2024). In order to ensure confidentiality, the survey was carried out in the private during routine pharmaceutical care services.

Data analysis: The completed questionnaires were cross checked for completeness, coded and entered into SPSS version 21 for descriptive and inferential statistics. Mean items scores was calculated and satisfaction score was interpreted as 1.0 – 1.80 (poor), 1.81 – 2.60 (fair), 2.61 – 3.40 (good), 3.41 – 4.20 (very good) and 4.21 – 5.0 (excellent). Satisfaction was set at average score of 3.41 or above which represent 80% on the scale. Chi square test was used to determine association between satisfaction and demographic factors. P value <0.05 was set for statistical significance.

Ethical issue: The study was approved by the human research ethics committee of the Borno State specialist hospital, Maiduguri.

RESULTS

Demographic data showed that more than half of respondents were females (54.7%) and most were married (50.2%). Majority of patients had either primary or secondary level education (77.3%) and have been on therapy for 4.8 ± 2.7 years. The mean age of respondents was 39.1 ± 10.7 years.

The mean score showed adequate satisfaction generally range from very good (41.5%) to excellent (31.5%) translating to 73% satisfaction with therapy management. However about a quarter of respondents were unsatisfied with this aspect of service.

Majority of respondents were generally satisfied with pharmaceutical care (75.9%), although about a quarter of respondents remain unsatisfied with set up, privacy and professional appearance.

A comparison of overall satisfaction showed that more than two third of respondents reported adequate satisfaction all aspects of pharmaceutical care services (≥80% score). However a significant proportion remains dissatisfied with services across the three domains.

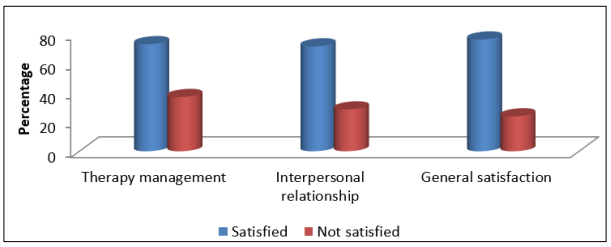

Figure 1. Components of satisfaction with pharmaceutical care services.

There was significant association between satisfaction and gender (p=0.007), age (p=0.031) and marital status (p=0.005).

Table 1. Demographic data of respondents

Variable	Number (%)
Gender	
Male	181 (45.3)
Female	219 (54.7)
Age (yrs.)	
≤ 20	10 (2.5)
21 – 30	69 (17.2)
31 – 40	147 (36.8)
41 – 50	109 (27.3)
51 – 60	65 (16.2)
Mean (SD)	39.1 ± 10.7
Education	
Primary	180 (45.0)
Secondary	141 (32.3)
Tertiary	79 (19.7)
Marital status	
Single	74 (18.5)
Married	201(50.2)
Divorced	85 (21.3)
Widowed	40 (10.0)
Occupation	
Civil service	97 (24.3)
Self-employed	149 (37.3)
Unemployed	119 (29.7)
Student	35 (8.7)
Duration of therapy (years)	
1 – 3	146 (33.0)
4 – 6	171 (37.8)
7 – 9	47 (4.2)
≥ 10	36 (6.5)
Mean (SD)	4.8 ± 2.7

DISCUSSION

Pharmaceutical care is critical for safe and proper usage of antiretroviral medications as well as maintenance of adequate level of adherence to therapy and achievement of desired clinical outcomes. The relationship between satisfaction with pharmaceutical care and better clinical outcomes such as immune reconstitution, reduction in viral load and improvement in quality of life is well documented [40]. The demographic data of respondents showed more female patients comparable to previous studies done in Nigeria and other sub Saharan African countries [41,42,43]. The comparatively higher number of higher number of female patients may primarily due to higher burden of HIV infection and are

more frequently diagnosed during routine antenatal care[22,44]. Furthermore, the practice of polygamy in many communities expose married women to HIV infection and have to be placed on antiretroviral drugs to prevent mother to child transmission [45,46].

The level of satisfaction observed in this study was comparable to previous studies in Nigeria [16,23] and other sub Saharan countries [22,47,48]. While contrasting low satisfaction have been reported [49,50,51], higher figures have been frequently found in literature [40,52,53]. The major factors for these contrasting level of satisfaction with pharmaceutical care among patients on long term therapy may be due to differences in patient characteristics, study settings, presence of comorbidities, sense of personal wellbeing, level of education, income and other factors[29,38,54]. While gender, age and marital status of patients were found in this study to be significantly associated with satisfaction, similar studies also reported association between educational status, occupation and duration of therapy [29,55].

The role of age in influencing satisfaction is believed to be due to the fact that older patients tend to have fewer expectations from therapy, so are more likely to be satisfied with services [56,57]. Among married patients, spousal psychological support, encouragement and financial provision have impact on patient disposition and outlook of outcomes of therapy [57]. While HIV infection remains associated with stigma particularly among the poor, residual anxiety from privacy of pharmaceutical care and confidentiality may also influence patient's perception of satisfaction.

The low level of satisfaction observed in this study complicate efforts at improving medication adherence, cause mistrust and may contribute to intentional interruption of antiretroviral therapy [58,59,60]. Furthermore, unfavorable experience with pharmaceutical care service delivery may also cause patients to have little confidence and trust in the ability of pharmacists to adequately respond to their individual medication needs [61,62,63].

Table 2. Therapy management

Items	Poor N (%)	Fair N (%)	Good N (%)	Very good N (%)	Excellent N (%)	Mean (SD)
The availability pharmacist to answer your questions	11(2.8)	10(2.5)	66(16.5)	152(38.0)	161(40.2)	4.11(0.95)
The way pharmacist helps you to manage your medications	15(3.7)	18(4.5)	47(11.7)	167(41.8)	153(38.3)	4.06(1.01)
How frequently do pharmacist checks how well your medications are working	16(4.0)	20(5.0)	74(18.5)	162(40.5)	128(32.0)	3.92(1.03)
The pharmacist's efforts to help you improve your health and to stay healthy	20(5.0)	17(4.3)	67(16.7)	166(41.5)	130(32.5)	3.92(1.05)
The information pharmacist gives you about the proper medicine storage	18(4.5)	17(4.3)	68(17.0)	163(40.7)	134(33.5)	3.95(1.04)
The help you get from pharmacist when there is problem with medication(s)	12(3.0)	21(5.3)	74(18.5)	160(40.0)	133(33.2)	3.95(0.99)
The written information pharmacist provides about drugs and/or diseases	23(5.7)	31(7.8)	80(20.0)	152(38.0)	114(28.5)	3.76(1.12)
The information pharmacist gives you about results you can expect from therapy	19(4.8)	21(5.3)	73(18.2)	177(44.3)	110(27.4)	3.85(1.04)
The pharmacist's help when a medication doesn't have the expected effect	12(3.0)	17(4.3)	79(19.7)	160(40.0)	132(33.0)	3.96(0.98)
How pharmacist use information of previous drugs in assessing drug therapy	19(4.8)	25(6.3)	67(16.7)	157(39.2)	132(33.0)	3.90(1.08)
The help you get from pharmacy staff to obtain your medicines	28(7.0)	22(5.5)	71(17.8)	166(41.5)	113(28.2)	3.79(1.13)
The way pharmacist works with you to get good results from your drugs	21(5.3)	25(6.3)	57(14.3)	191(47.7)	106(26.5)	3.84(1.05)
The way pharmacist works with doctor to ensure medications are the best for you.	19(4.8)	21(5.3)	73(18.2)	203(50.7)	84(21.0)	3.78(0.99)
The responsibility that pharmacist assumes for your drug therapy	15(3.8)	26(6.5)	68(17.0)	161(40.2)	130(32.5)	3.91(1.04)
Average score	**18(4.5)**	**21(5.3)**	**69(17.2)**	**166(41.5)**	**126(31.5)**	

Table 3. Interpersonal relationship

Description	Poor N (%)	Fair N (%)	Good N (%)	Very good N (%)	Excellent N (%)	Mean (SD)
The pharmacist's interest in your health	12(3.0)	27(6.7)	76(19.0)	197(49.3)	88(22.0)	3.81(0.96)
The pharmacist's professional relationship with you.	15(3.8)	21(5.3)	79(19.7)	165(41.2)	120(30.0)	3.89(1.10)
The courtesy and respect shown to you by pharmacy staff	18(4.5)	19(4.8)	93(23.2)	150(37.5)	120(30.0)	3.84(1.05)
The advice from pharmacist about solving problems with your medications	26(6.5)	17(4.2)	79(19.8)	164(41.0)	114(28.5)	3.81(1.09)
The help you get from pharmacist to avoid unnecessary costs for your prescriptions	31(7.8)	16(4.0)	65(16.3)	189(47.2)	99(24.7)	3.77(1.10)
The time the pharmacist spends with you	13(3.2)	20(5.0)	75(18.8)	181(45.3)	111(27.7)	3.89(0.97)
The pharmacist's instructions about how to take your medication	27(6.8)	21(5.2)	70(17.5)	160(40.0)	122(30.5)	3.82(1.13)
The professionalism of pharmacy staff	22(5.5)	20(5.0)	51(12.7)	197(49.3)	110(27.5)	3.88(1.04)
The way pharmacist answer your questions	12(3.0)	30(7.5)	70(17.5)	173(43.2)	115(28.8)	3.87(1.01)
Average score	**19(4.7)**	**22(5.5)**	**73(18.3)**	**175(43.8)**	**111(27.7)**	

Table 4. General satisfaction

Description	Poor N (%)	Fair N (%)	Good N (%)	Very good N (%)	Excellent N (%)	Mean (SD)
The privacy of your conversations with the pharmacist	30(7.5)	16(4.0)	74(18.5)	172(43.0)	108(27.0)	3.78(1.12)
The amount of time it takes to get a prescription filled at your pharmacy	2 (5.3)	22(5.5)	55(13.7)	162(40.5)	140(35.0)	3.95(1.09)
The professional appearance of the pharmacy	12(3.0)	22(5.5)	47(11.7)	183(45.8)	136(34.0)	4.02(0.97)
Your pharmacy services overall	6(1.5)	7(1.8)	69(17.2)	194(48.5)	124(31.0)	4.06(0.83)
Average score	**17(4.3)**	**17(4.3)**	**61(15.2)**	**178(44.5)**	**127(31.7)**	

Pharmacists are the last service providers to interact with patients on their way out of the hospital, so there is need to constantly adapt pharmaceutical care services to meet changing needs of patients on antiretroviral therapy. It is therefore imperative that pharmaceutical care engender satisfaction, build trust, openness and deliver accurate medication information. In addition, educate patients on potential side effects and proper use of medications as well as the critical role of adherence in achieving and maintaining immune recovery. While work pressure, shortage of pharmacists are frequently reported challenges in resource scarce settings, streamlining of dispensing process, work flow realignment to improve service delivery and delegation of non-core pharmacist functions to assistants can create more time for improved service performance and patient satisfaction.

Pharmaceutical care is central to improving positive therapy outcomes which depends on several cognitive services that can only be provided by pharmacists. These services include drug information, medication use information, detection of drug therapy problems, providing support and monitoring of adherence, document patient reported side effects/adverse reactions and well as respond to patient concerns on the effect of medication on their daily lives. These services when provided in patient friendly environment and in privacy have the capacity to promote satisfaction among patients.

Table 5. Association between demographic factors and satisfaction

Demographic variable	Response	Male (%)	Female (%)	Mean (SD)	P value
Gender	Poor	31 (7.7)	14 (3.5)	1.38 (0.23)	0.007
	Fair	28 (7.0)	41 (10.3)	2.12 (0.31)	
	Good	35 (8.7)	50 (12.5)	3.09 (0.22)	
	Very good	39 (9.8)	66 (16.5)	3.56 (0.43)	
	Excellent	42 (10.5)	54 (13.5)	4.31 (0.40)	
Age (yrs.)	Poor	19 (4.7)	11 (2.7)	1.12 (0.54)	0.031
	Fair	24 (6.0)	30 (7.5)	2.20 (0.16)	
	Good	40 (10.0)	74 (18.5)	2.59 (0.62)	
	Very good	68 (17.0)	72 (18.0)	3.75 (0.34)	
	Excellent	23 (5.8)	39 (9.8)	4.33 (0.44)	
Education	Poor	22 (5.5)	17 (4.2)	1.44 (0.29)	0.721
	Fair	26 (6.5)	29 (7.2)	2.01 (0.38)	
	Good	32 (8.0)	42 (10.5)	3.13 (0.22)	
	Very good	49 (12.3)	61 (15.3)	3.64 (0.33)	
	Excellent	58 (14.5)	64 (16.0)	4.06 (0.58)	
Marital status	Poor	36 (9.0)	13 (3.3)	1.37 (0.26)	0.005
	Fair	15 (3.7)	22 (5.5)	1.46 (0.65)	
	Good	45 (11.3)	47 (11.7)	3.15 (0.17)	
	Very good	56 (14.0)	62 (15.5)	3.53 (0.47)	
	Excellent	44 (11.0)	60 (15.0)	4.16 (0.59)	
Occupation	Poor	26 (6.5)	20 (5.0)	1.25 (0.36)	0.190
	Fair	16 (4.0)	24 (6.0)	2.12 (0.40)	
	Good	53 (13.3)	70 (17.4)	2.68 (0.51)	
	Very good	61 (15.3)	55 (13.7)	3.57 (0.28)	
	Excellent	30 (7.5)	45 (11.3)	4.39 (0.42)	
Duration of therapy (yrs.)	Poor	22 (5.5)	36 (9.0)	1.47 (0.24)	0.058
	Fair	38 (9.5)	22 (5.5)	2.17 (0.33)	
	Good	45 (11.3)	50 (12.5)	3.06 (0.21)	
	Very good	47 (11.7)	62 (15.5)	3.51 (0.55)	
	Excellent	35 (8.8)	43 (10.7)	4.12 (0.56)	

CONCLUSION

Satisfaction with pharmaceutical care was found among most patients; however a third of them had poor satisfaction. This clearly indicates that challenges remain in service delivery process, so there is need to be innovative in creating patient friendly environment and processes so as to improve service delivery experience and satisfaction.

Limitations

This study was carried out in one health facility, so the conclusions may not be extended to other patient populations and settings. There may be respondent bias which may be due to differences in socio-demographic characteristics of respondents. Furthermore, patients with informal education may have challenges with comprehension of questions even though this was mitigated by the use of research assistants who were fluent in the local languages.

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Conflict of interest

The author declares that there isn't any conflict of interest regarding the publication of this paper.

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