


Patients' Satisfaction With Pharmaceutical Care Services in Asthma: An Intervention Study in 2 Nigerian Hospitals

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Abstract

Quality in health care is commonly measured by patient satisfaction. This study assessed asthmatic patients' satisfaction with the pharmaceutical care services rendered in 2 Nigerian tertiary hospitals. This 3-arm intervention study was single-blinded, prospective, and randomized. The 3 arms were Usual Care, Individual Intervention, and Caregiver-assisted Intervention. Intervention arms received education for 6 months, whereas the Usual Care arm received no education. The Patient Satisfaction with Pharmaceutical Services questionnaire was utilized. Data were analyzed using the IBM SPSS Version 25.0 with statistical significance set as $P < .05$. Seventy-eight asthma patients participated in the 3-arm study. The majority of the patients (82.1%) were happy with the services provided by the pharmacists. More of the patients who received Individualized Intervention were highly satisfied, compared to those in the Caregiver-assisted Intervention arm and Usual Care arm (52.6% vs 44.7% vs 2.6%, $\chi^2 = 32.124$, $P < .001$). The Individualized Intervention satisfied patients better than the Caregiver-assisted Intervention. Pharmacists should strive to have direct communication with their patients despite the involvement of caregivers.

Keywords

asthma, pharmaceutical care, satisfaction

Introduction

Patient satisfaction refers to the degree of contentment with the health care that patients received from their health care provider (1). It is a key indicator of health care quality (2). It provides information on health care professionals' success at meeting the expectations of their clients and identifies potential areas for improvement (3,4). Patient satisfaction surveys are widely used in measuring the standard of care, as the experiences of patients in hospitals can be recorded (5).

In rendering pharmaceutical care, pharmacists take responsibility in the provision of drug therapy to achieve definite outcomes and improve the quality of life of their patients (6). The expanded roles of pharmacists, beyond traditional dispensing services, have provided opportunities for patient-centered pharmaceutical care services. The multidisciplinary approach enables pharmacists to collaborate with other members of the health care team to optimize patient care.

Different studies have reported varying factors that influence patient satisfaction with pharmaceutical care services. Some of these factors include patient demographics, practice setting, availability of medicines, waiting time, service quality (7). However, there is a paucity of data on patient satisfaction with pharmaceutical care services rendered in asthma settings in Nigeria. It is rare to observe hospital pharmacists in Nigeria proactively collaborating with other health professionals in the management of asthma, as compared to

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other disease states such as hypertension and diabetes. Asthma, a common chronic disease, affects approximately 13 million Nigerians (8).

The aim of this study was to assess asthmatic patients' satisfaction with the pharmaceutical care services rendered in an intervention study conducted in 2 Nigerian tertiary hospitals. The understanding of these factors would determine the necessity of having pharmacists involved in the management of asthma and provide insight on the services they could render.

Method

Study Design

This intervention study was single-blinded, 3-arm, prospective, and randomized. It was conducted in the Respiratory Units of the Department of Medicine of 2 Nigerian tertiary hospitals (March 2016 to September 2017).

Eligible participants were recruited into Usual Care, Individual Intervention, or Caregiver-assisted Intervention arms in a 1:1:1 ratio. The Random Allocation Software was utilized for the randomization process (9). Only the health professionals were informed about the arms. The patients were oblivious.

There were researchers (4 pharmacists in each hospital) who assisted the principal investigator during the clinic visits. These researchers were all trained by the principal investigator, prior to conducting the study. Neither the principal investigator nor the researchers were employed staff of the hospitals. Patients in the Usual Care arm received the standard care of the hospital, with no active participation by the pharmacist researchers.

There were 2 intervention arms: Individual Intervention arm and Caregiver-assisted Intervention arm. Patients in these arms received education about asthma and its management, proper inhaler techniques, proper peak flow meter technique, and other self-management measures. In the Individual Intervention arm, patient education was on individual basis while the caregivers were educated in the Caregiver-assisted Intervention arm. These caregivers were educated, informed to educate the asthma patients receiving their care, and followed up to encourage their patients to adhere to the interventions. The caregivers were selected by the patients. During their first clinic visit, patients in the Caregiver-assisted Intervention arm were asked to provide the details (name and phone number) of their choice caregiver. They were informed to receive the consent of the caregiver, as the principal investigator was to communicate with the caregiver via text messages and phone calls. Outside clinic visits, patients in the Individual Intervention arm and Caregiver-assisted Intervention arm received education through phone calls and text messages.

Patient-specific data were collected for all study participants, at baseline. Data were maintained with confidentiality. Peak flow meters were provided, without charge, to all the study participants. The patients were taught how to

assess their peak expiratory flow rate (PEFR) and document in the Symptom/Peak Flow Diary developed by Juniper and colleagues (10). Patients were informed that participation in the study was voluntary. When participants withdrew, others were recruited to fill the void of dropouts (within the specified recruitment time frame).

Study Setting

The 2 hospitals are federal tertiary hospitals of first-generation universities in Nigeria. They serve as major referral centers in the country and have over 500-bed capacity. They run Respiratory Clinics on a specific day in the week (Hospital 1—Tuesdays, Hospital 2—Mondays). In addition, there was a separate Asthma Clinic on Wednesdays, in the second hospital.

Eligibility Criteria

The inclusion criteria comprised confirmed diagnosis of asthma by a physician, no respiratory comorbidity, patients not less than 16 years old, ability to communicate in English (oral and written), able/willing to complete follow-up questionnaires, and telephone access. Exclusion criteria were patients who were pregnant, breastfeeding, or diagnosed with any mental health disorder.

Sample Size and Selection

Due to the few asthma patients who visited the hospitals for their asthma reviews, the study was time-driven. It was not feasible to conduct the study only when all patients had been recruited into the different arms. There would have been more likelihood for dropouts, withdrawal of consent for participation, and relocation from the area of study that would have affected the study. It was also difficult to ascertain the total population of asthma patients in both hospitals due to the inconsistency of patients attending their asthma reviews. Thus, we had start and stop dates that were specific to each patient since they were recruited on different days. The patients were recruited within 12 months which made it time-driven and not based on the calculation of sample size. Eligible patients who gave consent for participation were included in the study.

Data Collection

The Patient Satisfaction with Pharmaceutical Services questionnaire was utilized for the survey. See the supplementary file. The instrument was previously validated for use among HIV/AIDS patients in Nigeria (11,12). The internal consistency of the instrument was calculated using Cronbach α technique ($\alpha = .79$). The instrument assessed patient satisfaction with pharmaceutical care in a chronic disease state among Nigerian patients (11). Hence, it was adopted for this study.

The questionnaire had 2 domains. The first domain was for patients' demographics (4 items). The second domain was utilized Likert scale and had 5 subsections on patient

Table 1. Patients' Demographics.^a

Variables	n (%)
Gender	
Male	31 (39.7)
Female	47 (60.3)
Age (in years)	
16-24	14 (17.9)
25-34	8 (10.3)
35-44	14 (17.9)
45-54	14 (17.9)
55-64	17 (21.8)
≥65	11 (14.1)
Occupation	
Student	17 (21.8)
Civil servant	17 (21.8)
Self-employed	20 (25.6)
Others	24 (30.8)
Marital status	
Married	57 (73.1)
Single	21 (26.9)
Divorced/separated	0 (0.0)
Prior peak flowmeter training	8 (10.3)

^an = 78.

satisfaction. These included Interpersonal/Professional Relationship with pharmacists (4 items), patient counseling (5 items), drug information (3 items), managing therapy (4 items), and general satisfaction (1 item).

Data Analysis

Data were analyzed using the IBM SPSS Version 25.0. Descriptive statistics were used to summarize the data. Pearson χ^2 test was used to test the association between the different levels of intervention and satisfaction with pharmaceutical care services with statistical significance set as $P < .05$.

Results

There were 78 asthma patients who participated in the 3-arm study, 39 patients from each hospital, 13 patients per arm (Usual Care, Individual Intervention, Caregiver-assisted Intervention).

Table 1 shows the patients' demographic details. More than half of the patients were females (60.5%), not less than 35 years old (71.7%) and married (73.1%). About a fifth of them were students (21.8%). A 10th of the patients (10.3%) had received peak flowmeter training prior to the study.

Table 2 shows the patients' satisfaction with pharmaceutical care services. The majority of the patients agreed that they had an excellent professional relationship with the pharmacists (96.2%), advised about possible side effects with their medications (87.2%), provided with information about the indications of their medications (93.6%), received sufficient help when they had problems with their medications

(83.4%). Generally, 82.1% of the patients were happy with the services provided by the pharmacists.

After categorization into 2 levels of satisfaction, high and poor satisfaction, more than half of the participants were highly satisfied with the pharmaceutical services that were rendered (51.3%).

Table 3 shows the association between the level of intervention and satisfaction with pharmaceutical care. There was a statistically significant association between the level of intervention and satisfaction. More of the patients who received Individualized Intervention were highly satisfied, compared to those in the Caregiver-assisted Intervention arm and Usual Care arm (52.6% vs 44.7% vs 2.6%, $\chi^2 = 32.124$, $P < .001$).

Discussion

This study revealed that the majority of the patients were happy with the pharmaceutical services provided by pharmacists. Patients who received the individualized interventions were most satisfied.

More female patients participated in the study compared to males in a 3:2 ratio. It has been reported that asthma is more prevalent among adult females, especially nonallergic asthma (13). Asthmatic females experience more severe morbidity than males (13). The higher prevalence and severity of asthma in women is attributed to sex hormones (14,15). Increased asthma symptoms occur in females, starting at puberty, compared to boys. However, after puberty, the role of sex hormones in regulating asthma symptoms during menstruation, pregnancy, and menopause is not clear (15). It has been reported that testosterone has immunosuppressive effects and this hormone might also be protective against immune-inflammatory processes that trigger asthma (16). Animal studies have supported this notion as male mice, not female, were protected from allergic airway inflammation (17). Our findings also reveal that asthma is present in different age brackets. Asthma affects young adults and the elderly patients. It is a chronic airway disease that affects all ages (18).

Our results indicate that the patients were generally satisfied with the pharmaceutical services that were rendered and the professionalism of the pharmacists. In the 2 tertiary hospitals, there were no hospital pharmacists directly attached to the respiratory team. For this reason, there was skepticism among the physicians at initial introductions by the principal investigator. This was understandable, as the physicians were not accustomed to working directly with pharmacists during asthma reviews. Pharmacists who previously visited the consultation rooms were medical representatives from pharmaceutical companies who were majorly interested in providing drug-related information concerning their company's products.

A major highlight of this study was the free provision of peak flow meters to all the participants. Importantly, the participants were taught how to use the device. Only a 10th of the asthma patients had peak flowmeter training prior to the study.

Table 2. Patients' Satisfaction With Pharmaceutical Care Services.^a

Statements	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	Mean (SD)
A. The pharmacist:						
1. Has an excellent professional relationship with you	0 (0.0)	0 (0.0)	3 (3.8)	30 (38.5)	45 (57.7)	4.54 (0.57)
2. Spends as much time as you need with you	1 (1.3)	8 (10.3)	5 (6.4)	26 (33.3)	38 (48.7)	4.18 (1.03)
3. Is always available and answers your questions well	2 (2.6)	7 (9.0)	4 (5.9)	28 (35.9)	37 (47.4)	4.00 (1.05)
4. You are shown courtesy and respect by the pharmacy staff	0 (0.0)	0 (0.0)	3 (3.8)	25 (32.1)	50 (64.1)	4.60 (0.57)
B. Patient counseling:						
5. Constantly emphasizes on the importance of taking your medications as prescribed (adherence)	2 (2.6)	9 (11.5)	10 (12.8)	21 (26.9)	36 (46.2)	4.03 (1.14)
6. Gives you information about the results to expect from your drug therapy	2 (2.6)	6 (7.7)	7 (9.0)	25 (32.1)	38 (48.7)	4.17 (1.05)
7. Advises you about problems that might occur with your medications (side effects)	0 (0.0)	3 (3.8)	7 (9.0)	27 (34.6)	41 (52.6)	4.36 (0.81)
8. Advises you on the types of food you should eat (nutrition)	13 (16.7)	12 (15.4)	11 (14.1)	16 (20.5)	26 (33.3)	3.38 (1.50)
9. Gives you information on some drugs and other things to avoid while on your medications	0 (0.0)	8 (10.3)	6 (7.7)	32 (41.0)	32 (41.0)	4.13 (0.94)
C. Drug information:						
10. Always determines how much knowledge/information you have about asthma and your medications	1 (1.3)	4 (5.1)	8 (10.3)	19 (24.4)	46 (59.0)	4.35 (0.95)
11. Informs you of the purpose of your medications	0 (0.0)	1 (1.3)	4 (5.1)	30 (38.5)	43 (55.1)	4.47 (0.66)
12. Provides you with written information about your drugs and disease	3 (3.8)	7 (9.0)	9 (11.5)	22 (28.2)	37 (47.4)	4.06 (1.14)
D. Managing therapy:						
13. Asks questions about your previous illnesses and medications taken	2 (2.6)	11 (14.1)	8 (10.3)	24 (30.8)	33 (42.3)	3.96 (1.16)
14. Works together with you to choose a medication schedule that is most convenient for you	7 (9.0)	7 (9.0)	10 (12.8)	23 (29.5)	31 (39.7)	3.82 (1.30)
15. Always seeks to know if you have any health problems related to your medications	1 (1.3)	6 (7.7)	8 (10.3)	24 (30.8)	39 (50.0)	4.21 (1.00)
16. Renders sufficient help when you have problems related to your medications	1 (1.3)	3 (3.8)	9 (11.5)	25 (32.1)	40 (51.3)	4.28 (0.91)
E. General satisfaction						
17. I am happy with the service provided by the pharmacists	0 (0.0)	0 (0.0)	14 (17.9)	25 (32.1)	39 (50.0)	4.32 (0.76)

Abbreviations: A, agree (coded as 4); D, disagree (coded as 2); N, neutral (coded as 3); SA, strongly agree (coded as 5); SD, strongly disagree (coded as 1); SDv, standard deviation.

^an = 78.

Table 3. Association Between Level of Intervention and Satisfaction With Pharmaceutical Care Services.^a

Independent variables	Poorly satisfied, n (%)	Highly satisfied, n (%)	Total, n (%)	P value
Level of intervention		$\chi^2 (2, N = 78) = 32.124$		<.001 ^b
Individualized intervention	6 (15.0)	20 (52.6)	26 (33.3)	
Caregiver-assisted intervention	9 (22.5)	17 (44.7)	26 (33.3)	
Usual care	25 (62.5)	1 (2.6)	26 (33.3)	

^an = 78. Cramer's V = 0.642.

^bP < .05.

There were redemonstrations during follow-up calls and visits. Both PEFr and symptom monitoring are useful in asthma self-management (19). Peak expiratory flow rate is reduced in asthma and guidelines recommend the assessment of severity levels based on the most severe symptoms and PEFr (20).

More than four-fifths of the asthma patients agreed that the pharmacists maintained a professional relationship with them, spent quality time, were available to provide answers to their questions, and showed them courtesy and respect.

Patients can build trust in health care professionals when there is consistency in the expression of professional attitudes and behaviors (21). The impression the public has about pharmacists is also influenced by their mode of dressing and appearance (22). The pharmacists ensured that they always wore clean, white ward coats over their professional outfits while in the hospitals. These white overalls were distinct from that of other health professionals as they had the recognizable pharmacist badge.

The majority of the participants agreed that the pharmacists stressed the need for adherence to their medications, provided information on expected results from their drug therapy, advised about possible side effects of their medications. Poor adherence to asthma medications could increase the risk of severe asthma exacerbations, hospitalizations, health care costs, and deaths (23,24). Patients most often become poorly adherent in chronic disease states where they do not have discomforting symptoms (25). Thus, health professionals need to provide the possible benefits of adherence to therapy. It is important for asthma patients to take their controller medications, as prescribed, even when they feel well (19). In addition, if patients are not informed about the common side effects of their medications, it could lead to nonadherence when they experience any of these side effects (25).

The patients were majorly in agreement that the pharmacists always determined their level of knowledge about asthma and their medications, provided information on drug indications, provided written information about asthma and their medications. Reinforcement of education is vital in asthma management. Asthma education should be provided at every patient encounter as the ability of a one-time asthma education intervention to influence self-management practices is limited (26). Repeated short educational intervention improves asthma control and quality of life (27).

The majority of the patients agreed that the pharmacists enquired about their past medical/medication history, worked with them to choose a convenient medication schedule, identified and rendered sufficient help when there were drug-related problems. In the management of asthma, understanding the previous illnesses and medications could help prevent drug–drug and drug–disease interactions. For inhalers that are used twice daily, it is infelicitous to assume that patients would space as 12 hourly. It is necessary for pharmacists to plan convenient schedules with their patients and ensure that timing is clearly understood.

The asthma patients who received individualized interventions were most satisfied. Those who received Caregiver-assisted Intervention were more satisfied than those in the Usual care arm. Patients in the Individualized Intervention arm interacted directly with the Pharmacists and this direct communication might have influenced their high level of satisfaction with this level of intervention. Although those in the Caregiver-assisted Intervention arm were supposed to receive the same education through their caregivers, it is possible that it was not always delivered as health professionals would have done.

It should be noted that patients and other health professionals might be unaware of the services provided by pharmacists if these services are not provided on a routine basis. Patients might not expect or demand a service they have never received (28). Prior to this study, the patients neither had pharmacists during their asthma reviews nor pharmacists rendering follow-up pharmaceutical care services. This

might be one of the reasons for the general high satisfaction with the pharmaceutical care services rendered.

This study had some limitations. The open study design was due to the few number of asthma patients who came for their asthma review in both hospitals. Although the hospitals are 2 reputable federal tertiary hospitals in Nigeria, the use of 2 hospitals limits the generalizability of the findings. It is also possible that having 2 arms for interventions (Individualized or Caregiver-assisted) might have produced more satisfied patients. In addition, the study focused on adult asthma patients and did not provide data for children who may need caregiver support. The study provides evidence for pharmaceutical care services that pharmacists can render in collaboration with physicians, nurses, and other members of the health care team, in asthma settings. Patient outcome is multifactorial and not solely dependent on the pharmacist.

Conclusion

The asthma patients were satisfied with the pharmaceutical care services. Those who received Individualized Interventions were highly satisfied, compared to those in the Caregiver-assisted Intervention arm and Usual Care arm. As much as possible, pharmacists should have direct communication with their patients. Collaborations with other members of the health care team are necessary for rendering efficient pharmaceutical care services in hospitals.

Authors' Note

To conduct this study, ethical approval was obtained from the Health Research and Ethics Committee of UNTH (NHREC/05/01/2008B-FWA00002458-1RB00002323) and LUTH (ADM/DCST/HREC/APP/431). The participants provided both written and oral consents.

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Supplemental Material

Supplemental material for this article is available online.

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