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Epilepsy patients' satisfaction with pharmacist interventions: The impact of specialized pharmaceutical care services

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ABSTRACT

Objectives: Patient satisfaction evaluations are necessary to understand patient needs and their impression of the services received. The aim of this study was to determine the impact of specialized pharmaceutical care (PC) services on epilepsy patients' satisfaction with pharmacist interventions.

Materials and Methods: An open, prospective, and longitudinal randomized controlled study was conducted among epilepsy patients recruited from two epilepsy referral centers in Nigeria. The patients were randomized into one of two study groups: Intervention group (IG) or control group (CG). Patients in the IG received specialized PC services in addition to the usual care offered at the hospitals. The effect of PC on patients' satisfaction with pharmacists' interventions was evaluated using a validated instrument. Data was analyzed using the IBM Statistical Products and Services Solutions version 25.0 with statistical significance set at $P < 0.05$.

Results: Patients in the CG had a significantly lower PC satisfaction score than those in the IG at three months and six months – pre-intervention: 2.505 vs. 2.559; $t = -0.803$; $P = 0.423$, three months: 2.483 vs. 3.811; $t = -19.618$; $P = 0.0001$, six months: 2.506 vs. 3.969; $t = -24.393$; $P = 0.0001$, indicating a significant improvement in patient satisfaction with PC services among those in the IG over time.

Conclusion: Specialized PC services improve patients' satisfaction with pharmacists' interventions.

Keywords: Patient satisfaction, Specialized pharmaceutical care, Epilepsy

INTRODUCTION

Pharmaceutical care (PC) is an outcome-oriented pharmacy practice that is centered on the patient.^[1] It has been described as providing medication-related care in an accountable manner with the aim of attaining precise therapeutic goals that enhance the patient's health and quality of life. The goals of PC include the relief of presenting symptoms; arresting or delaying of the disease process; cure of a disease; and prevention of future disease recurrence.^[2]

The provision of PC involves three primary responsibilities: to promptly establish probable and existing medication-associated problems, resolve existing medication-associated problems, and prevent probable medication-associated problems.^[2] In providing PC services, the clinical

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pharmacist assesses drug-related problems, develops a care plan, implements the plan, and evaluates the treatment outcome.^[1]

PC mandates clinical pharmacists to provide patients with the best practice of pharmacy that involves ensuring drug safety, efficacy, quality, and rational cost. Clinical pharmacists have the responsibility of educating and counseling patients, assessing their medication needs, managing their medications, and developing a professional relationship with the patients and their families.^[1] PC, when practiced properly, improves therapeutic outcomes in patients. Thus, it is pertinent to evaluate the quality of the PC service provided.^[3,4]

Patient satisfaction can be used to evaluate the quality of health-care services offered in a country.^[5] It is a key indicator of the quality of health-care delivery.^[3] Although it is considered subjective, the measure of patient satisfaction with health-care services is a major assessment tool that can be used to improve the quality of services provided by healthcare professionals in hospitals. Moreover, it reveals the relationship between patients' expectation of health-care services and their actual experience. Assessing patient satisfaction helps to determine and track changes in patient desires and needs and enables clinicians to improve on service delivery.^[5-7]

Reports from the previous studies show that interventions made by pharmacists were crucial to enhance the health of patients with epilepsy. These reports indicate that interventions by pharmacists were able to forestall problems associated with drug therapy.^[8] In an effort to promote the provision of PC services in Nigeria, the Pharmacist Council of Nigeria (PCN) in 2005 established a basic standard for provision of pharmaceutical care in the country.^[9] In Nigeria, there is a lack of evidence demonstrating the involvement of pharmacists in the provision of specialized care to epilepsy patients. This study focuses on examining the impact of specialized PC services on satisfaction with pharmacists' interventions among epilepsy patients in Nigeria.

MATERIALS AND METHODS

Study design

A randomized controlled study was conducted at two epilepsy referral centers in Southern Nigeria, namely, the University of Calabar Teaching Hospital and University of Uyo Teaching Hospital. It was a longitudinal, open, and two-arm parallel prospective study. Patients were followed up for a period of six months.

Patients, who were diagnosed with epilepsy and received therapeutic care at the selected study sites, who provided written informed consent to participate in the study and expressed willingness to abide by the study protocols, were

recruited. Pediatric patients, those diagnosed as having non-epileptic seizures only and those with acute psychiatric illness were excluded from the study.

The recruited patients were then randomly assigned to one of the two study groups, the intervention group (IG) or the control group (CG) based on the number assigned to them after recruitment. Randomization of study participants was done with the aid of an online randomization software (<http://www.randomization.com>).^[10] Patients randomized into CG received the usual care (UC) offered in the hospitals for patients with epilepsy while those in the IG were offered specialized PC in addition to the UC offered in the hospitals.

PC services offered to patients in the IG included patient education, medication reconciliation, medication counseling, identification, and resolution of medication-related problems.

An assessment of the impact of specialized PC services on patient satisfaction was carried out using the *Patients' Satisfaction with PC Questionnaire*, a validated instrument developed by Larson *et al.*^[11] It is a 20-item validated instrument that can easily be used in practice to examine patients' satisfaction with PC services. It has two scales (dimensions), Friendly Explanation (the first 11 questions) and Managing Therapy (the last 9 questions). The Friendly Explanation scale includes items that are related to the quality of information delivered and explanations offered, as well as the promptness of service and friendliness of the pharmacist. The Managing Therapy scale includes specific questions that address PC activities.^[11]

Study participants were evaluated with this instrument three times within the period of the study. First before the intervention, then at three months and six months after implementation of the intervention, respectively.

Data obtained from the patients during the study was analyzed using the IBM Statistical Products and Services Solutions for Windows, version 25.0 (IBM Corp, version 25.0 Armonk, NY, USA) with descriptive and inferential statistics. Confidence interval and statistical significance were set at 95% and $P < 0.05$, respectively.

RESULTS

One hundred and ninety-three epilepsy patients were recruited into the study, of which 157 patients completed the study (79 patients in the IG and 78 patients in the CG).

Sociodemographic and clinical profile of patients in the CG and IGs

The sociodemographic and clinical profile of the patients in both arms of the study is presented in Table 1. There was no statistically significant difference in the sociodemographic and clinical characteristics of patients in both arms of the study.

Patient satisfaction with PC services

Comparisons (paired *t*-test) within IG showed an insignificant change in PC satisfaction scores at three months and six months. However, in the IG, comparisons (paired *t*-test) revealed that there was a significant increase in the patients' PC satisfaction scores at three months and at six months. Moreover, comparisons (independent *t*-test) between groups (CG vs. IG) showed that patients in the IG had a significantly higher PC satisfaction scores than those in the CG group at three months and at six months [Table 2].

The mean scores of patient satisfaction with PC services items and test of difference (independent *t*-test) over time are

presented in Table 3. Results in the table show a significantly higher satisfaction with PC services (item by item) over time. Furthermore, patients in the IG had higher satisfaction scores in the friendly explanation and managing therapy components of PC services compared to patients in the CG at three months and at six months.

DISCUSSION

Patient satisfaction evaluations are important in obtaining a detailed understanding of a patient's needs and impression of the service received. A study on the level of satisfaction among 225 patients of a medical outpatient department

Table 1: Sociodemographic characteristics of patients.

Demographic characteristics	Control group		Intervention group		Pearson Chi-square test	
	<i>n</i>	Proportion (%)	<i>n</i>	Proportion (%)	χ^2	<i>P</i> -value
Age group						
18–24	19	24.40	27	34.20	3.296	0.348
25–34	23	29.50	21	26.60		
35–44	9	11.50	12	15.20		
≥45	27	34.60	19	24.10		
Sex					0.153	0.696
Male	45	57.70	48	60.80		
Female	33	42.30	31	39.20		
Educational level					0.200	0.905
Primary	6	7.69	4	6.33		
Secondary	27	34.62	21	32.91		
Tertiary	45	57.69	54	60.75		
Marital status					0.011	0.995
Single	46	59.00	46	58.20		
Married	29	37.20	30	38.00		
Widowed	3	3.80	3	3.80		
Religion					0.353	0.552
Christianity	76	97.40	78	98.70		
Islam	2	2.60	1	1.30		
Employment status					1.857	0.603
Employed	29	37.20	24	30.40		
Unemployed	29	37.20	37	46.80		
Self-employed	16	20.50	13	16.50		
Retired	4	5.10	5	6.30		
Monthly income (NGN)*					4.012	0.548
No income	29	37.20	36	45.60		
<30,000	9	11.50	9	11.40		
30,000–50,000	9	11.50	5	6.30		
51,000–70,000	5	6.40	9	11.40		
71,000–100,000	16	20.50	11	13.90		
>100,000	10	12.80	9			
Duration of epilepsy					6.581	0.087
≤2 years	20	25.6	22	27.8		
3–5 years	19	24.4	13	16.5		
≥6 years	39	50.0	44	55.7		
Presence of comorbidity					2.573	0.109
None	51	65.4	60	75.9		

*NGN: Nigerian naira, **P*≤0.05

Table 2: Mean patients' satisfaction with PC services scores of UC and PC and test of difference over time.

Pairs	Time	CG		IG		CG versus IG	
		Mean (SD)	P-value	Mean (SD)	P-value	Time	P-value
1	Pre-Int.	2.51 (0.39)	0.524	2.56 (0.46)	0.0001	Pre-Int.	0.423
	3 months	2.48 (0.41)		3.81 (0.44)			
2	Pre-Int.	2.51 (0.39)	0.964	2.56 (0.46)	0.0001	3 months	0.0001
	6 months	2.51 (0.37)		3.96 (0.38)			
3	3 months	2.48 (0.41)	0.457	3.81 (0.44)	0.0001	6 months	0.0001
	6 months	2.51 (0.37)		3.96 (0.38)			

IG: Intervention group, CG: Control group, PC: Pharmaceutical care, UC: Usual care, SD: Standard deviation, Pre-Int.: Pre-intervention

Table 3: Mean scores of patient satisfaction with pharmaceutical care items and test of difference over time.

Instrument Items	Pre-intervention		t-test	3 months		t-test	6 months		t-test
	CG	IG		CG	IG		CG	IG	
	The professional appearance of the Pharmacist.	2.654	2.747	-0.863	2.782	3.823	-9.385***	2.846	3.987
The availability of the pharmacist to answer your questions.	2.526	2.671	-1.086	2.705	3.911	-9.475***	2.731	4.025	-11.2***
The Pharmacist's professional relationship with you.	2.692	2.443	1.789	2.641	3.911	-9.701***	2.731	4.000	-10.5***
The Pharmacist's ability to advise you about problems that you might have with your medications.	2.615	2.709	-0.610	2.539	3.949	-11.65***	2.589	4.000	-11.4***
The promptness of prescription drug service.	2.679	2.759	-0.497	2.667	3.987	-9.119***	2.705	4.038	-11.2***
The professionalism of the Pharmacist staff	2.526	2.646	-0.755	2.654	3.975	-10.54***	2.564	4.127	-12.4***
How well the pharmacist explains what your medications do.	2.500	2.696	-1.266	2.474	4.000	-11.70***	2.589	4.117	-12.8***
The pharmacist's interest in your health.	2.397	2.569	-1.169	2.500	3.785	-9.605***	2.641	3.924	-8.9***
How well the pharmacist helps you manage your medication.	2.487	2.532	-0.265	2.462	3.595	-8.413***	2.474	3.861	-10.9***
The Pharmacist's efforts to solve problems that you have with your medications.	2.500	2.418	0.537	2.423	3.810	-9.909***	2.474	3.911	-11.2***
The responsibility that the Pharmacist assumes for your drug therapy.	2.487	2.646	-1.111	2.359	3.696	-10.20***	2.564	3.835	-9.8***
Mean friendly explanation score	2.313	2.618	-0.732	2.504	3.858	-10.035***	2.628	3.627	-11.1***
How well the Pharmacist instructs you about how to take your medications.	2.526	2.620	-0.602	2.410	3.772	-10.80***	2.462	4.025	-12.8***
Your Pharmacist's overall services.	2.500	2.468	0.211	2.372	3.532	-8.630***	2.321	3.835	-13.1***
How well the Pharmacist answers your questions.	2.487	2.418	0.460	2.449	3.544	-8.963***	2.423	3.873	-12.4***
The Pharmacist's efforts to help you improve your health or stay healthy.	2.526	2.557	-0.203	2.513	3.646	-8.080***	2.372	3.886	-11.3***
The courtesy and respect shown you by the Pharmacist staff.	2.449	2.418	0.207	2.449	3.785	-9.733***	2.359	3.835	-12.1***
The privacy of your conversation with the Pharmacist.	2.397	2.379	0.115	2.295	3.911	-11.12***	2.462	4.089	-13.3***
The Pharmacist's efforts to assure that your medications do what they are supposed to.	2.346	2.494	-1.121	2.359	3.759	-10.40***	2.449	4.013	-11.9***
How well the Pharmacist explains possible side effects.	2.423	2.405	0.148	2.385	3.823	-11.22***	2.231	3.949	-14.2***
The amount of time the Pharmacist offers to spend with you.	2.410	2.456	-0.357	2.141	3.823	-13.60***	2.244	3.962	-15.7***
Mean managing therapy score	2.452	2.468	-0.126	2.374	3.676	-10.282***	2.369	3.941	-12.97***
Mean overall satisfaction score	2.505	2.559	-0.803	2.483	3.811	-19.62***	2.506	3.969	-24.4***

***P<0.001. IG: Intervention group, CG: Control group

in Thailand showed that access to pharmacy services was viewed as poor by about 35% of the study population.^[12]

In another study on outpatients of a hospital in Islamabad-Pakistan, 35% of the study population were not satisfied

with pharmacy services.^[13] Furthermore, in a study at Indira Gandhi Memorial Hospital, only about 10% of 251 patients were highly satisfied with the health services offered at the outpatient department.^[14]

The results of our study revealed significant differences between the mean satisfaction scores at baseline and post-intervention among the patients in the PC group (IG). It also showed significant differences between the mean satisfaction scores of patients in the UC (control) and PC (intervention) groups over time of the intervention. Among the patients in the IG, there was a significant increase in their satisfaction with the PC scores over time. Furthermore, patients in the IG had significantly higher satisfaction with PC scores than those in the CG over time. Thus, suggesting that the patients' satisfaction with pharmacist services significantly improves with the implementation of PC interventions. Our findings agree with another research report, which concluded that PC programs effectively improved the satisfaction of patients with the services provided by pharmacists.^[15]

Satisfaction with services rendered can influence patients' willingness to pay for such services.

In a study conducted at the University of Utah Asthma Clinic, about 62% of the patients were "somewhat" to "pretty" satisfied with the counseling services offered by pharmacists for asthmatic patients.^[16] The authors also reported that only 25% of the study participants expressed willingness to pay an additional fee for PC services.^[16]

Low patient satisfaction with care offered by pharmacists can result in poor adherence to treatment, thus leading to poor treatment outcomes. Therefore, in the provision of PC services, patients' satisfaction with care should be an important consideration for clinical pharmacists.

In our study, we observed that pharmacists were not part of the health team that provided specialized clinical services to patients with epilepsy during their clinic appointments in the sites used for the study. This finding suggests a poor involvement of pharmacists in the management of epilepsy, indicating a lack of commitment by clinical pharmacists to the provision of specialized care to people living with epilepsy.

Despite being adequately trained in PC and disease management, the involvement of clinical pharmacists in the provision of specialized care to epilepsy patients including pharmacist-led epilepsy consultations is poor.^[17,18] Several factors limiting the implementation of extensive and elaborate pharmaceutical interventions have been identified.^[19,20] Therefore, it is pertinent to overcome these limitations to improve therapeutic outcomes in patients with chronic diseases such as epilepsy. For instance, reports indicate that in several countries, clinical pharmacists offering specialized services are not financially compensated. This lack of funding dissuades pharmacists from offering these specialized services to patients.^[19,20]

Furthermore, there appears to be insufficient information and understanding among other health-care professionals of the role of pharmacists in the control of seizures, optimization of therapeutic outcomes, and improvement of quality of life in epilepsy. This lack of understanding hinders the utilization of the knowledge and skills of clinical pharmacists in the management of epilepsy.^[21]

On the other hand, the poor involvement of pharmacists in the provision of specialized care to patients with epilepsy may be due to the non-availability of a sufficient number of clinical pharmacists with cognate experience in providing care for persons with epilepsy. It is thus imperative to train more pharmacists in the provision of therapeutic care to persons living with epilepsy.^[21]

Limitations of the study

Attrition or loss during follow-up was a concern, but this was contained by a close follow-up of study participants and using a six-month follow-up period in the study design.

CONCLUSION

PC interventions significantly improved epileptic patient satisfaction with pharmacist services. Patient satisfaction with care should be an important consideration for clinical pharmacists. There is a need to improve the involvement of clinical pharmacists in the provision of healthcare to people living with epilepsy.

Ethical approval

The research/study approved by the Institutional Review Board at University of Uyo Teaching Hospital & University of Calabar Teaching Hospital, number Reference numbers: UUTH/AD/S/96/VOL.XIV/571 & UCTH/HREC/33/454, dated April 11, 2016, and April 26, 2016.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the

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