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Evaluating quality of life and satisfaction with pharmaceutical care services among patients with type II diabetes mellitus receiving care in a resource-limited setting

Unyime Israel Eshiet[1], Blessing Ante[1], Abasiodiong Uwak[1]

[1]Department of Clinical Pharmacy and Biopharmacy, University of Uyo, Uyo, Akwa Ibom State, Nigeria.

***Corresponding author:**
Unyime Israel Eshiet, PhramD, PhD
Department of Clinical Pharmacy and Biopharmacy, University of Uyo, Uyo, Akwa Ibom State, Nigeria.

unyimeeshiet@uniuyo.edu.ng

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ABSTRACT

Objectives: Quality of life assessment is considered an important measure of outcome in long-term illness and management. Patient satisfaction surveys are essential in obtaining a comprehensive understanding of the patient's needs and their opinion of the service received. The purpose of this study was to determine the health-related quality of life (HRQOL) and satisfaction with pharmaceutical care services among patients with type II diabetes mellitus (DM) receiving care in Nigeria.

Materials and Methods: A cross-sectional prospective study was conducted among 120 patients with type II DM receiving treatment at General Hospital Ikot Ekpene in Akwa Ibom state, Nigeria. Patients who met the eligibility criteria and attended clinic appointments at the medical outpatient clinic as well as those admitted into the medical wards of the hospital during the period of the study were recruited. Data on the extent of patients' satisfaction with pharmaceutical care as well as their quality of life in diabetes were obtained using the patient satisfaction with pharmaceutical care questionnaire, and the patient quality of life based on diabetes related complaints questionnaire. The duration of the study was 7 months. Data obtained were analyzed using the Statistical Program and Service Solutions version 25.0 computer package with statistical significance set at $P < 0.05$.

Results: The quality of life of the patients based on diabetes-related complaints was poor. Fatigue was the most frequently reported complaint ($n = 116$; 96.6%), followed by polyuria ($n = 106$; 88.33%). The overall mean scores of patient satisfaction with pharmacists' friendly explanation and management of therapy were 4.03 (±0.52) and 3.53 (±0.44), respectively. There was a statistically significant relationship between patients' satisfaction with pharmacists' friendly explanations and patient complaints of weight changes ($r = 0.219$; $P < 0.05$), decreased energy levels ($r = 0.205$; $P < 0.05$), and numbness ($r = 0.270$; $P < 0.01$). Furthermore, there was a statistically significant relationship between patients' satisfaction with pharmacists' therapy management and patients' complaint of fatigue ($r = 0.187$; $P < 0.05$), numbness ($r = 0.189$; $P = 0.05$), and blurred vision ($r = 0.204$; $P < 0.05$).

Conclusion: The HRQOL of the patients was poor as the majority of the patients had diabetes-related complaints. Patients' satisfaction with the pharmaceutical care services offered was good. Periodic evaluation of the quality of life and satisfaction with health-care services among patients with DM is recommended.

Keywords: Quality of life, Pharmaceutical care, Patient satisfaction

INTRODUCTION

Diabetes mellitus (DM) is a diverse group of metabolic disorders that are often associated with a high disease burden in developing countries such as Nigeria.[1] A report from an epidemiological

survey between 1990 and 2017 has shown an increase in the prevalence of DM in Nigeria. All regions of the country have been affected with the highest prevalence seen in the south-south geopolitical zone.[2]

A report suggests that Nigeria has the greatest number of people living with DM in Africa with an increasing burden of the disease over 25 years.[3] A recent study placed the prevalence of DM in two regions of the country (south-south and south-east) at approximately 8%, with Akwa Ibom state reported to have a DM prevalence of 9.5%.[4] These recent findings suggest a rising prevalence of DM in Nigeria, surpassing previously reported values.

The level of care received by patients with DM is perceived as low due to prolonged waiting times for appointments, long waiting hours in the out-patient clinics, and long queues waiting for medication.[5,6] At present, DM care is poorly coordinated especially at primary and secondary public health-care centers. This lack of coordination has led to a greater reliance on unorthodox medicine and complimentary or alternative medicine with disastrous consequences.[5-7]

DM is a major cause of morbidity and mortality both in developing and developed countries. Due to rapid urbanization with changes in lifestyle and nutrition in the 21st century, there has been a rise in the disease and its complications.[1] Morbidity and mortality from DM are very high in Nigeria due to poor management and non-compliance with global treatment guidelines.[6] A descriptive study carried out by Aguocha *et al.* reported that out of 1124 diabetic patients admitted between 2000 and 2004 in a tertiary health-care facility in south-east Nigeria, 14% died.[8]

The provision of pharmaceutical care services enhances drug therapy and improves the health-related quality of life (HRQOL) of patients. HRQOL can be reported directly by the patient as a patient-reported outcome.[9-11] Pharmacists are professional health-care experts on drug therapy and can contribute to the optimization of treatment through various clinical interventions including medication review follow-up, patient counseling, therapeutic drug monitoring, and by also providing patients with information on drug interactions, adverse drug effects, and the appropriate use of medications.[12,13]

Pharmacy practice has evolved over the years to provide patient-oriented pharmaceutical care services. This has created a need for periodic assessment of the quality of the services provided. The patient satisfaction with these services can be used as a variable to assess the quality of care offered by pharmacists.[14]

The measure of patient satisfaction as a patient's subjective assessment of pharmaceutical care service is an important parameter that can be employed to improve the services offered by pharmacists.[15-17]

Evaluating patient satisfaction helps to identify changes in patient needs, and findings from such evaluations can be used in developing measures to improve service and maximize the professional capacity of pharmacists.[15-17]

HRQOL is increasingly accepted as a relevant assessment variable in health-care delivery. It can be defined as the value assigned to the duration of life as modified by the social opportunities, perceptions, functional states, and impairments that are influenced by disease, injuries, treatments, or policy.[18] It is also viewed as an individual's or the perceived physical and mental health over time.

Determining the HRQOL of patients with DM is important as it provides pharmacists with a means of evaluating the efficacy of therapeutic interventions and provides evidence for service improvement. A recent study found that adults with complicated DM living in South East Nigeria had significantly reduced overall and domain-specific quality of life. Moreover, the researchers also found that the patients' HRQOL was worsened by presence of comorbid conditions.[19]

Patients' satisfaction with the pharmaceutical care services provided is an important indicator for measuring the quality of healthcare offered by pharmacists. This study is, therefore, aimed at providing more data on the HRQOL and satisfaction with pharmaceutical care services among patients with DM in Nigeria with a bid to identify gaps in the management of these patients and develop measures to improve therapeutic outcomes in patients with type II DM.

MATERIALS AND METHODS

Study design

A cross-sectional prospective study was conducted among 120 patients with type II DM receiving treatment at General Hospital Ikot Ekpene in Akwa Ibom state, Nigeria.

General Hospital Ikot Ekpene is a major secondary health-care facility in Akwa Ibom state, southern Nigeria. The facility provides healthcare to the people of Ikot Ekpene local government area and its environs. The mission of the hospital is to ensure the provision of safe, quality, affordable, adequate, equitable, and accessible health services to all.

Patients attending clinic appointments at the medical outpatient clinic (which holds daily) as well as those admitted into the medical wards of the hospital were recruited into the study. Before recruitment, each participant was given sufficient information on the aim and scope of the study. The participants were also informed that participation in the study was optional and that no patient shall be victimized in any way for declining consent to participate in the study.

Study population/sample size

All patients with type II DM who met the eligibility criteria were recruited into the study. The eligibility criteria for recruitment into the study were patients diagnosed with type II DM and receiving treatment at the hospital within the period of the study; patients who expressed willingness to participate in the study (November 2019–January, 2020); and patients who provided written informed consent to participate in the study.

Newly diagnosed diabetic patients and those with acute mental health disorders were excluded from the study. Sample size was determined using the formula described by Yamane;

n = N/1+N (e^2).[20] Where n = calculated sample size; N = number of cases of DM receiving clinical care in the study center; e = level of precision (±5%). Applying the Yamane formular described above and based on the population size of 168 cases, the calculated sample size was 118 cases.

However, we obtained data from 120 patients. Thus, a total of 120 patients who fulfilled the eligibility criteria participated in the study.

Data collection instruments

Data on the demographic and clinical characteristics of the patients were obtained using a suitably designed, pre-piloted data collection instrument. The data collection instrument was designed by the authors and subjected to face validation by a team of clinicians. The first draft of the instrument was pre-tested with the case notes of ten patients at the study site to assess completeness of data capture from the case notes with the designed instrument. The final draft of the instrument was modified based on the results of pre-testing.

The data collected from patients' case notes included;

i. Patient's gender
ii. Patient's age
iii. Educational level
iv. Duration of illness
v. Presence of comorbidity
vi. Type of comorbidity (if present)
vii. Patients' recent fasting blood sugar level
viii. Patients' recent glycated hemoglobin value
ix. Patients' recent blood pressure reading
x. Presence of diabetes related complications
xi. Type of diabetes related complications (if any).

Data were obtained through patient interview and from their case notes. Patients' fasting blood sugar and blood pressure were current values, collected as the patient presented at the clinic. Furthermore, data on the extent of patients' satisfaction with pharmaceutical care services, as well as their quality of life in diabetes was obtained using the patient satisfaction with pharmaceutical care questionnaire, and the patient quality of life based on diabetes related complaints questionnaire (described below). The questionnaires were physically administered to the patients by the researchers after obtaining informed consent to participate in the study.

The patient satisfaction with pharmaceutical care questionnaire

This is a 20–item validated instrument used to assess patients' satisfaction with pharmaceutical care services. The patient rated their satisfaction with pharmaceutical care services offered in the facility based on a scale of 1–5, with 1, 2, 3, 4, and 5 indicating poor, fair, good, very good, and excellent, respectively. The instrument provides information on patients' satisfaction with two dimensions of pharmacy services. It is relatively simple to use in practice. It has been found to be quite useful to practicing pharmacists and can be used in assessing satisfaction in patients with different disease conditions. It has two scales (dimensions);

a. Friendly Explanation (the first 11 questions) and
b. Managing Therapy (the last 9 questions).

The friendly explanation scale includes items that are associated with the concepts of setting (neatness), explanation (information and instructions), and consideration (friendliness and promptness of service). The managing therapy scale includes items developed specifically to address pharmaceutical care. Although scores for each individual question can be compared, a more reliable approach is to use the score of each scale. Dealing with two dimensions rather than the 20 items provides more stable scores and makes for a more focused analysis. To calculate a respondent's score for a scale, the responses of the items in that scale are summed and divided by the number of items in that scale, that is, 11 items in friendly explanation and nine items in managing therapy.[21]

The patient quality of life based on diabetes related complaints questionnaire

This questionnaire is a 14–item instrument that assesses the presence or absence of diabetic related complaints by the patients. It was adapted from the modified diabetes quality of life-17 questionnaire used in the previous study that was carried out in the general medicine unit of a tertiary hospital in Southern India.[22] The adapted instrument was pre-tested in a smaller population of patients with type II DM.

It is easy to administer and covers a wide range of diabetes related complaints that negatively affect quality of life. With the aid of the instrument, study participants were asked to affirm or refute the presence of the following diabetes related complains, namely, fatigue, sleep disturbances, polyurea, hypoglycemic symptoms, tingling sensation/

numbness, blurred vision, weight change, problems in work life, decreased energy level, difficulty in walking, problems in social life, swelling of limbs, pains in limbs, and delayed wound healing.

Both instruments (patient satisfaction with pharmaceutical care and patient quality of life based on diabetes related complaints questionnaires) were interviewer administered and 100% response rate was achieved.

Data were collected for about 14 weeks, between October 15, 2019, and January 27, 2020.

Data analysis

Data were analyzed using the IBM Statistical Product and Service Solutions for Windows, Version 25.0 (IBM Corp, Version 21.0, and Armonk, NY, USA). Descriptive statistics was used to summarize data, while inferential statistics such as bivariate Pearson correlation and multivariate linear regression analysis were used to test the relationship between assessment variables. Statistical significance was set at $P < 0.05$.

Ethical approval

The study protocol was approved by the Health Research Ethics Committee of the Akwa Ibom State ministry of health (MH/PRS/99/VOL.V/713). Furthermore, institutional approval was obtained from the Management of General Hospital Ikot Ekpene. A written informed consent was obtained from the participants and strict confidentiality was ensured during the data collection and handling.

RESULTS

Sociodemographic and clinical characteristics of the patients

The sociodemographic and clinical characteristics of the patients are presented in [Table 1]. Just under half of the study participants (48.33%; n = 58) were aged 60 years and above. About 65% (78) of the patients were also being managed for conditions other than type II DM.

Patients' fasting blood sugar, glycated hemoglobin, and blood pressure levels

The recent levels of the patients fasting blood sugar and blood pressure are shown in [Figure 1]. In 100% (120) of the cases studied, there was no evidence of glycated hemoglobin investigation. Only 20% (24) of the cohort studied attained blood sugar control (<126 mg/dl/7.0 mmol/L) based on their recent fasting blood sugar test results, while only 27.5% (33) of the study participants had their blood pressure within clinically acceptable values (<140/90 mmHg).

Table 1: Demographic/clinical characteristics of the patients (n=120).

Characteristics	Frequency	Percentage
Gender		
Male	62	51.7
Female	58	48.3
Age (years)		
15–30	3	2.5
31–50	16	13.3
51–60	43	35.8
>60	58	48.3
Educational level		
Primary	9	7.5
Secondary	68	56.7
Tertiary	43	35.8
Duration of illness		
1 month–5 years	75	62.5
6–10 years	33	27.5
11–15 years	9	7.5
≥16 years	3	2.5
Presence of comorbidity		
None	42	35.0
Yes	78	65.0
Type of comorbidity		
HTN	56	71.8
HTN and BPH	4	5.1
HTN and CKD	4	5.1
Asthma	4	5.1
HTN and Asthma	2	2.6
HIV	2	2.6
Arthritis	2	2.6
PUD	2	2.6
HTN and HIV	1	1.3
HTN and Arthritis	1	1.3

HTN: Hypertension

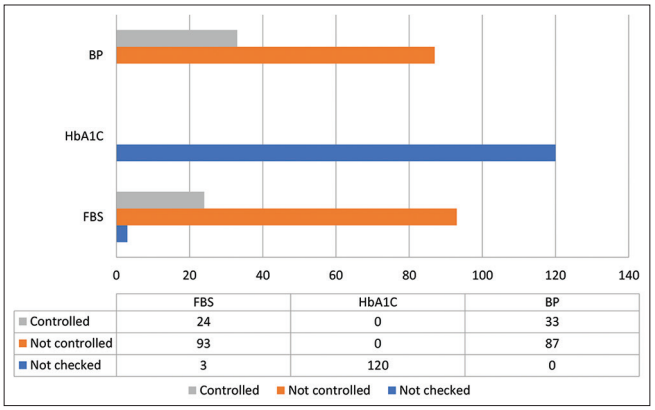

Figure 1: FBS, HbA1C, and BP readings. FBS: Fasting blood glucose, HbA1C: Glycated hemoglobin, and BP: Blood pressure.

Proportion of patients with clinical complications of DM

The proportion of patients with clinical complications associated with DM is shown in [Table 2]. Results showed

that 31.67% (38) of the patients had complications associated with DM. Neuropathy was the most commonly reported complication, occurring in 44.74% (17) of the patients who had DM related clinical complications.

Assessment of patients' quality of life based on diabetes-related complaints

The item-by-item diabetes-related complaints and the frequency of occurrence among the patients are presented in [Table 3]. Fatigue was the most frequent diabetes related complaint among the study population, 96.67% (116) of the patients. Over 59% (71) of the patients had problems in their work as a result of DM such as absence from work and reduced productivity.

Patients' satisfaction with pharmaceutical care

The mean scores (item-by-item) of the patients' satisfactions with the friendly explanation of the pharmacist, as well as the patients' satisfaction with the pharmacist ability to manage their therapy are presented in [Tables 4 and 5], respectively. The overall mean scores of patients' satisfaction with pharmacists' friendly explanation and management of therapy were 4.03 (±0.52) and 3.53 (±0.44), respectively.

Table 2: Patients with diabetes-related clinical complications.

Complication	Frequency	Percentage
None	82	68.33
Neuropathy	17	14.17
HHS	10	8.33
Nephropathy	5	4.17
DFU	4	3.33
Retinopathy	2	1.67

HHS: Hyperosmolar hyperglycemic state, DFU: Diabetic foot ulcer

Table 3: Patients quality of life based on diabetes-related complaints.

S. No.	Diabetes-related complaints	Present, *n* (%)
1.	Fatigue	116 (96.67)
2.	Sleep disturbances	43 (35.83)
3.	Poly urea	106 (88.33)
4.	Weight change	63 (52.5)
5.	Problems in work life	71 (59.16)
6.	Decrease in energy levels	83 (69.17)
7.	Hypoglycemic symptoms	89 (74.17)
8.	Tingling sensation/numbness	100 (83.33)
9.	Blurred vision	44 (36.67)
10.	Problems in social life	67 (55.83)
11.	Difficulty in Walking	33 (27.5)
12.	Swelling of Limbs	19 (15.83)
13.	Pains in Limbs	95 (79.17)
14.	Delayed Wound Healing	8 (6.67)

Relationship between patients quality of life based on diabetes-related complaints and satisfaction with pharmaceutical care

There was a statistically significant relationship between patients' satisfaction with pharmacists' friendly explanation and patient complaint of weight changes ($r = 0.219$; $P < 0.05$), decreased energy levels ($r = 0.205$; $P < 0.05$), and numbness ($r = 0.270$; $P < 0.01$). These results indicate that patients' who were more satisfied with pharmacists' friendly explanation were less likely to complain about weight changes, decreased energy levels, and numbness.

In addition, there was a statistically significant relationship between patients' satisfaction with pharmacists' therapy management and patients' complaint of fatigue ($r = 0.187$; $P < 0.05$), numbness ($r = 0.189$; $P = 0.05$), and blurred vision ($r = 0.204$). These results indicate that patients' who were more satisfied with pharmacists' therapy management were less likely to complain about fatigue, numbness, and blurred vision.

Relationship between glycemic/blood pressure control and satisfaction with pharmaceutical care/quality of life based on diabetes related complaints

There was no statistically significant relationship between the patients' current blood sugar or blood pressure status and their satisfaction with pharmaceutical care or their quality of life based on diabetes-related complaints.

DISCUSSION

Although studies have shown that more females visit health facilities for medically related issues than males,[23] the majority of our study participants were male. These findings are similar to an observation in a previous study by Prajapati *et al.* in South India, where males constituted about 64% of the study population.[22]

Most of the patients we studied were aged 60 years and above. A previous study on the global prevalence of diabetes by Wild *et al.* found that in developing countries, majority of the people with diabetes were in the age range of 45–65 years.[24] A similar observation was reported in a previous study by King *et al.* who reported that in developing countries, majority of patients with DM are in the age range of 45–64 years.[25]

Sixty-five percentages of the patients we studied had comorbidities. Hypertension was found to be the most frequently documented comorbidity in this population of patients. Lloyd *et al.*, in their study, reported that hypertension was the most prevalent complication of DM, occurring in 46% of the patients that they studied.[26] This finding is also similar to that reported by several other studies

Table 4: Mean scores of patient's satisfaction with friendly explanation of pharmacists.

S. No.	Questionnaire items	Mean score	Standard deviation
1.	The professional appearance of the pharmacist.	4.21	0.71
2.	The availability of the pharmacist to answer your questions.	4.13	0.72
3.	The pharmacist's professional relationship with you.	4.17	0.70
4.	The pharmacist's ability to advise you about problems that you might have with your medications.	4.22	0.74
5.	The promptness of prescription drug service.	3.97	0.82
6.	The professionalism of the pharmacist staff.	4.08	0.78
7.	How well the pharmacist explains what your medications do.	3.77	0.80
8.	The pharmacist's interest in your health.	3.94	0.68
9.	How well the pharmacist helps you manage your medication.	3.98	0.84
10.	The pharmacist's efforts to solve problems that you have with your medications.	3.98	0.80
11.	The responsibility that the pharmacist assumes for your drug therapy.	3.92	0.77
Overall Mean Score		4.03	0.52

Table 5: Mean scores of patients' satisfaction with pharmacist management of therapy.

S. No.	Questionnaire items	Mean scores	Standard deviation
1.	How well the pharmacist instructs you about how to take your medications.	3.61	0.75
2.	Your pharmacist's overall services.	3.57	0.72
3.	How well the pharmacist answers your questions.	3.40	0.66
4.	The pharmacist's efforts to help you improve your health or stay healthy.	3.46	0.70
5.	The courtesy and respect shown you by the pharmacist staff.	3.40	0.68
6.	The privacy of your conversation with the pharmacist.	3.47	0.69
7.	The pharmacist's efforts to assure that your medications do what they are supposed to.	4.14	0.89
8.	How well the pharmacist explains possible side effects.	3.26	0.80
9.	The amount of time the pharmacist offers to spend with you.	3.40	0.73
Overall mean score		3.52	0.44

on patients with diabetes. For instance, Wexler *et al.* reported 89%, while Gautam *et al.* and Spasić *et al.* also reported 41% and 76%, respectively.[27-30]

We found no evidence of glycosylated hemoglobin investigations in all the cases studied. This lack of data is a huge concern. Routine glycosylated hemoglobin investigation is imperative in the management of DM, because it is an important measure of long-term glycemic control and is directly correlated with the long-term complications of diabetes. Although the ideal frequency of glycosylated hemoglobin testing is yet to be determined; it is generally recommended that 2–4 tests be performed annually. The lack of monitoring of glycosylated hemoglobin in this population may be due to the high costs of this test and the pervasive challenge of lack of equipment, commonly reported in resource limited settings.

Over 30% of the cohort studied had complications associated with DM, with neuropathy being the most frequently reported complication. The long-term effects of diabetes are usually insidious and often times go unnoticed until late; however, they are serious, usually debilitating and may become life-threatening if left untreated. Chronic complications of diabetes are diverse and include macrovascular and microvascular diseases.

In our assessment of the patients' quality of life based on diabetes related complaint, we identified fatigue as the most frequent complaint, reported in over 96% of the cases studied. More than 50% of the patients had problems in their work and social life. Quality of life has increasingly become recognized as a vital outcome of healthcare. It represents the ultimate goal of all health-care interventions. It is crucially important as it is a predictor of a patient's capacity to manage his or her disease and maintain health and well-being in the long-term.

The development of long-term complications of diabetes, such as retinopathy, nephropathy, diabetic foot ulcers, cardiovascular diseases, and erectile dysfunction, significantly affects the physical well-being of diabetic patients, and ultimately their quality of life. This decrease in quality of life is because the patient's ability to undertake usual activities is hindered as a result of these complications, thus negatively affecting their HRQOL.

Patient satisfaction with pharmaceutical care services was categorized into two scales; satisfaction with the friendly explanation of pharmacists and satisfaction with pharmacists' management of therapy scales. In both scales, the rating of the patients' satisfaction was above average. These findings may indicate an adequate integration of pharmaceutical care services in the provision of care to patients with DM in the hospital used for the study. This finding is similar to a report by Onavbavba *et al.*, who evaluated patients' satisfaction with pharmaceutical care services in four selected health-care facilities in Delta state, Southern Nigeria.[31] In their study, the authors found that in all the four health facilities, patient satisfaction with pharmaceutical care services was rated above average. Several other studies from various health facilities have reported that patients were satisfied with the pharmaceutical care services provided.[32-36]

The provision of pharmaceutical care services has been found to increase the satisfaction of diabetic patients with health-care services.[37] The relationship between patient satisfaction and other relevant components of health care has been established. The patient satisfaction has been associated with the health seeking behavior of patients including medication adherence.[38] Patients who are satisfied with health-care services are more likely to continue with such services, maintain relationship with their health-care provider, comply with therapeutic recommendation, and participate in responsible self-care.[39]

We found an association between patients' satisfaction with pharmacists' friendly explanation and patients' complaint of weight changes, decreased energy levels, and numbness. We also found an association between patients' satisfaction with pharmacists' management of therapy and patients' complaint of fatigue, numbness, and blurred vision. Our findings suggest that diabetic patients, who are satisfied with pharmacists' friendly explanation, are less likely to complain about weight changes, decreased energy levels, and numbness. Furthermore, our findings suggest that diabetic patients, who are satisfied with pharmacists' management of their therapy, are less likely to complain about fatigue, numbness, and blurred vision.

However, we found no association between patients' satisfaction with pharmaceutical care services and their blood pressure or blood sugar levels. Aharony and Strasser, in their research, report opined that although research is yet to find a direct correlation between patient satisfaction and improved outcome, satisfied patients tend to comply more with treatment recommendations. They also stated that the level of satisfaction and adherence to treatment will ultimately affect other health outcomes of the patient including quality of life and duration of hospitalization.[39]

Diabetes has become increasingly prevalent and demands better care and control. The quality of life assessment is considered an important measure of outcome in long-term illness and management. The mere presence of diabetes can reduce the quantity and quality of any relationship, hinder traveling, and increase economic burden.[40] Most health-care providers focus on medically related outcomes only when assessing the efficacy of their intervention. However, for a better outcome, it is important to extend the assessment of clinical interventions to the impact on the physical, emotional, social, and economic wellbeing of the patient, which is the patient's quality of life. Patients' quality of life is very important, because it is a powerful tool to predict an individual's capacity to manage the disease and maintain long-term health and well-being.[41]

Routine assessment of quality of life as a part of clinical practice has the potential to improve communication between the patient and the health-care provider, identify frequently overlooked problems, assess the problems, and evaluate the effect of therapeutic efforts at the individual patient's level.[42] The patient satisfaction surveys are also essential in obtaining a comprehensive understanding of the patient's needs and their opinion of the services received. It is a vital tool in evaluating the quality of health-care delivery service in hospitals. Low patient satisfaction can lead to poor compliance with treatment recommendations, resulting in poor clinical and humanistic outcomes. We, therefore, recommend routine assessment of quality of life, as well as satisfaction with health-care services provided among diabetic patients. This will help identify gaps in the treatment offered and help improve clinical and humanistic outcomes of management. Our study has certain limitations. Self-reported instruments were used to assess outcome measures; however, the instruments used were reliable instruments deployed in the previous studies.

CONCLUSION

The HRQOL of the patients was poor as majority of the patients had diabetes related complaints. Patients' satisfaction with the pharmaceutical care services offered was good. There was an association between the patients' satisfaction with pharmaceutical care services and the diabetes related complains of weight changes, decreased energy levels, numbness, fatigue, and blurred vision.

Periodic evaluation of the quality of life and satisfaction with health-care services among patients with DM is recommended. Furthermore, there is need to institutionalize periodic monitoring of glycosylated hemoglobin for patients with diabetes receiving care in Nigerian hospitals.

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Declaration of patient consent

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

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None.

Conflicts of interest

There are no conflicts of interest.

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