DIABETES MELLITUS AND QUALITY OF LIFE OF PATIENTS ATTENDING A SECONDARY HEALTH FACILITY IN KANO, NIGERIA

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Abstract
Diabetes mellitus (DM) is a disease of global public health importance associated with high morbidity and mortality. It is seen as one of the most important chronic diseases in the world that pose threats to patient's quality of life. This study aimed to assess the quality of life of patients with diabetes mellitus at a secondary health care setting in Kano State Nigeria. Utilizing a descriptive cross-sectional design and a systematic sampling technique, data was collected from 144 eligible respondents using the World Health Organization's quality of life questionnaire. The data was analysed using SPSS version 20 software and presented using frequency tables and percentages. Scores were assigned to individual responses of items of quality of life and were categorized based on the World Health Organization's quality of life index. Findings from the study revealed, that near half (48.3%) of the patients experience low quality of life in the physical health domain and less than half (45.5%) were rated as high quality in social relationship domain. The study also identified insufficient income, lack of accessibility to health insurance schemes, physical inactivity, co-morbidities and presence of diabetic complications of neurological and ophthalmologic basis as factors contributing to poor quality of life of the patients. The study concluded that diabetes mellitus has negatively affected all quality of life domains of patients and therefore more efforts from government, client education from caregivers, social support and quality service delivery by health institutions are strongly recommended.

Keywords: Diabetes Mellitus, patients, quality of life, Health

Introduction

Diabetes mellitus (DM) is a disease of global public health importance associated with high morbidity and mortality (Rwegerera et al, 2018). According to the result of the international diabetes federation (2015), there are 415 million people worldwide suffering from diabetes mellitus with a figure projected to 642 million by 2040 or may even double by the year 2040 (Prajapati, Blake, Acharya & Sheshadri, 2017). The greatest increases will be in developing countries (69%) compared with developed countries 20% (Shaw, Sicree &Zimmet, 2010). There is also a rising burden from the complications of DM alongside the ever increasing prevalence of the disease (You et al, 2017).

In the African sub-region diabetes is frequently undiagnosed. In most cases it is diagnosed incidentally during a routine check-up or when patients present with complications (International Diabetes Federation [IDF, 2016]). The World Health Organization (WHO) statistics indicate that Nigeria has the highest number of diabetic patients in sub Saharan Africa (Chinenye & Ogbera, 2013). The incidence and prevalence of diabetes mellitus in Nigeria continues to increase despite great deal of research and resources with the current trend of transition from communicable to non-communicable diseases, it is projected that non communicable will equal or even exceed communicable diseases in developing nations, including Nigeria thus culminating in double burden of disease IDF (2016).

In Nigeria the current prevalence of DM among adult aged 20- 60 years is reported to be 1.7%, it is but however widely perceived that prevalence figures reported by the International Diabetes Federation (IDF) grossly under-reported the true burden of DM in Nigeria given that they are derived through extrapolation of data from other countries (Dahiru, Aliyu & Shehu, 2015). Researchers have reported prevalence ranging from 2% to 12% across the country in recent years (Nyenwa et al., 2017). Diabetes is associated with a high risk of micro vascular (e.g., neuropathy, nephropathy& retinopathy) and macro vascular (myocardial infarction, angina pectoris, stroke and amputations) complications. As result, these complications cause the mortality rate among diabetic patients to be about twice as much as that of non-diabetic individuals of similar ages (Kiadaliri, Najafi & Sani, 2013). Besides the trouble of taking oral anti diabetic agents several times a day the fear of subcutaneous injection of insulin, and incidents of hypoglycaemia might depress diabetic patients and further reduce health quality of life (You et al, 2017).

Quality of life is an important aspect of diabetes because the poor quality of life leads to a diminished

self-care, which in turn leads to worsened glycaemic control, increased risks of complications, and exacerbation of diabetes. Several studies demonstrated that diabetes has a strong negative impact on quality of life, especially in the presence of complication (Ibrahim, 2018).

However, most of the study on diabetes and health-related quality of life have been conducted in developed countries where there is access to better health care facility in developing countries the morbidity associated with diabetes and its complication is certainly higher as compared to developed countries, which adversely affect the health-related quality of life of those patients (Jain, Shivkumar & Gupta, 2014). The state however lacks much empirical values to justify the magnitude of the problem especially at setting of the study. Hence, this study is aimed to assess the health-related quality of life diabetes mellitus patients attending diabetic clinic of Murtala Muhammad specialist hospital, Kano.

Objectives
1. To assess the quality of life of diabetic patients attending diabetic clinic at Murtala Mohammed Specialist Hospital, Kano.
2. To identify the clinical factors affecting the quality of life of diabetic patients attending diabetic clinic at Murtala Mohammed Specialist Hospital, Kano.
3. To identify the socioeconomic factors affecting the quality of life of diabetic patients attending diabetic clinic at Murtala Mohammed Specialist Hospital, Kano.

Research Questions
1. What is the quality of life of diabetic patients?
2. What are the clinical factors affecting the quality of life of diabetic patients?
3. What are the socioeconomic factors affecting the quality of life of diabetic patients?

Methodology
The study utilized a descriptive cross-sectional research method. The research was carried out at the diabetic clinic of Murtala Muhammad Specialist Hospital, Kano. The hospital is located at Kofar Mata Road, Kano Municipal local government Kano state. The hospital was established in 1922 by the native authority. It was commissioned in 1926 in a densely populated area of Kano state, and it was the first hospital set up by the British colonial government with the aims of curing for the colonial masters and African workers who were working with the colonial government and native authority. The diabetic's clinic in particular is managed by 4 nurses, 3 doctors and health record officers. The clinic days are on Tuesday and Thursday every week, the average number of patients turn out each clinic day is about 120. The

clinic provides other services in addition to consultation, such services include blood glucose monitoring, patient education on disease and their management.

The population of the designed study comprises of diabetic patients attending diabetic clinic of Murtala Muhammad specialist hospital, Kano within the period of research, the average number of patients attending the clinic per week is 240. The sample size was determined using a Cochrane formula for a simple population and a systematic sampling technique was used to select 144 subjects within 5 weeks of the clinic. An interviewer administered questionnaire (IAQ) was used as the instrument for data collection using the World Health organization's quality of life questionnaire. This questionnaire has consisted of 26 items: two items that are evaluated separately are overall quality of life and satisfaction with health, and 24 items have been clustered into four domains (physical health, psychological health, social relationships and environment). The responses of each question were rated on a 5-point Likert scale and scored from 1 to 5. Each item had five levels of patients' responses very dissatisfied / very poor was coded as 1, dissatisfied / poor was coded as 2, neither dissatisfied nor satisfied / neither poor nor good was coded as 3, satisfied / good was coded as 4, and very satisfied / very good was coded as 5. The questionnaire produced four domain scores. Two that were examined separately: question 1 asked about an individual's overall perception of quality of life and question 2 asked about an individual's overall perception of his or her health. Domain scores were scaled in a positive direction (i.e., higher scores denote higher quality of life). A method for the manual calculation of individual domain scores was below: Physical health domain= (Q3 + Q4 + Q10 + Q15 + Q16 + Q17 + Q18). Psychological health domain= (Q5 + Q6 + Q7 + Q11 + Q19 + Q26). Social relationships domain= (Q20 + Q21 + Q22). Environmental domain= (Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25). The second transformation method converted domain scores to a 0-100 scale, using the formula shown below: Transformed scale = (actual raw score – lowest possible raw score) *(100/possible raw score range) Where "actual raw score" was the values achieved through summation, "lowest possible raw score" was the lowest possible value that could occur through summation (this value would be 4 for all facets). A total score was determined by summing scores across all items. Thus, scores on the WHOQOL-BREF could range from 26 to 130. The following values of scores were extracted from the reviewed studies and were applied in the current study: score ≤ 45, low QOL; score 46–65, moderate QOL; and score > 65, relatively high QOL.

A total of 143 respondents out 144 were interviewed. Data collected was analysed by the researcher using statistical package for social science (SPSS) version 20, and was presented in tables of frequency and percentage. A letter of introduction was obtained from the Department of Nursing Science, Bayero University Kano and submitted to Hospital Management Board, and an ethical clearance letter was obtained from Hospital Management Board to carry out the study at Murtala Mohammed Specialist hospital Kano, letter of permission to carry out the research was also obtained. An informed consent was also obtained from the respondents. Voluntary participation was ensured as the respondents were given the permission to quit participation at any point in the study.

Result

The mean age and standard deviation of the respondents were 54.73±7.34. Near half of the respondents (46.9%) were in age group (50-60), six (6) out of every ten (10) (60.1%) are males, majority (84.6%) reported Hausa/Fulani as their ethnic group, more than half (57.3%) of them are married, three quarter (75.5%) of the study group were nuclear family, more than one third (38.5%) of them had non-formal education, less than half (46.9%) of the respondents are unemployed (Table1).

Table 1: Socio-Demographic Characteristics of Respondents

Variables	N	%
Age (Years)		
Below 50	35.0	24.5
50-60	67.0	46.9
Above 50	41.0	28.7
Gender		
Male	86.0	60.1
Female	57.0	39.9
Ethnic group		
Hausa/Fulani	121	84.6
Yoruba	14.0	9.80
Igbo	0.00	0.00
Others	8.00	5.60
Marital status		
Single	15.0	10.5
Married	82.0	57.3
Divorce	19.0	13.3
Widow	27.0	18.9
Family type		
Nuclear	108	75.5
Extended	35.0	24.5
Educational level		
Non formal	55.0	38.5
Primary	14.0	9.80
Secondary	38.0	26.6
Tertiary	36.0	24.5
Occupational		
Unemployed	67.0	46.9
Employed	39.0	27.3
Self-employed	37.0	25.9

Mean age of respondents Mean=54.74, SD=7.32

Research Question One

What is the quality of life of diabetic patients?
The calculated aggregate mean (2.67) for the items above was found to be less than the decision mean (3.0), this signifies that the majority of the respondents have low quality of life. Table 2 reveals that near half (48.3%) of the study group were rated as low-level quality of life in physical health domain, more than half (51.7%) of them had a moderate quality of life in psychological health domain, less than two- third (63.3%) of respondents were rated as moderate quality of life in environmental health domain. Less than half (45.5%) of them were rated as high quality in social relationship domain.

From Table 2, more than one third (35.7%) of the respondents had duration of diagnosis of diabetes between (1-3) years, more than half (55.9%) of the study group mentioned diabetes-related complication, three(3) out of every ten (10) (30%) of them had neurological complications, about half (49.7%) did not do physical exercise, less than two third (61.5%) were following nutrition therapy, majority (87.5%) of them were on pharmacological therapy, six(6) out every seven (7), (42%) were on oral hypoglycaemic agents as pharmacological regimen, majority (87.4%) of the study group had co morbidities with diabetes, more than one third (35%) of them had diabetes and hypertension as their co morbidities.

Table 2: Respondent's Quality of Life

Scale points/domain and facets	VP		Poor		NpG		Good		Very Good	
	N	%	N	%	N	%	N	%	N	%
General quality of life	1	0.7	60	42.	12	8.4	69	48.3	1	0.70
General health	2	1.4	35	24.	5	3.5	99	69.2	2	1.40
Physical health										
Pain	14	9.8	64	44.	40	28.	22	15.4	3	2.10

Energy	7	4.9	48	33.	68	47.	48	33.6	0	0.00
Sleep and rest	13	9.1	75	52.	5	3.5	26	18.2	2	1.40
Dependence on medical aids	12	8.4	55	38.	46	32.	75	52.4	4	2.80
Mobility	3	2.1	52	36.	12	8.4	73	51.0	1	0.70
Activities of daily living	3	2.10	59	41.	5	3.5	76	53.1	3	2.10
Working capacity	0	0.0	60	42.	6	4.2	76	53.1	1	0.70
Psychological health Positive feelings	5	3.50	29	20.	89	62.	19	13.3	1	0.70
Negative feelings	36	25.2	54	37.	43	30.	10	7.00	0	0.00
Self-esteem	2	1.40	27	18.	6	4.2	107	74.8	1	0.70
Concentration	10	7.00	54	37.	48	33.	29	20.3	2	1.40
Bodily image	28	19.0	44	30.	53	37.	17	11.9	1	0.70
Personal beliefs	3	2.10	12	8.4	87	60.	39	27.3	2	1.40
Social relationship Personal relationships	3	2.10	22	15.	8	5.6	106	74.1	4	2.80
Sexual activity	18	12.6	37	25.	37	25.	51	35.7	0	0.00
Social support	4	2.80	23	16.	12	8.4	102	71.3	2	1.40
Environment Financial support	4	2.80	41	28.	93	65.	5	3.50	0	0.00
Bodily image	28	19.0	44	30.	53	37.	17	11.9	1	0.70
Accessibility of information	2	1.40	52	36.	57	39.	32	22.4	0	0.00
Leisure activity	33	23.1	86	60.	16	11.	8	5.60	0	0.00
Home environment	4	2.80	13	9.1	1	0.7	124	86.7	1	0.70
Access to health care	20	14.0	26	18.	8	5.6	89	62.2	0	0.00
Security	4	2.80	17	11.	88	61.	33	23.1	1	0.70
Physical environment	3	2.10	10	7.0	81	56.	47	32.9	2	1.40
Transport	13	9.10	43	30.	5	3.5	82	57.3	0	0.00

Aggregate Mean=2.67; Decision Mean =3.00

Also, Table 3 reveals that less than half (48.3%) of the study group were rated as low level quality of life in physical health domain, more than half (51.7%) of them had moderate quality of life in psychological health domain, less than two third (63.3%) of respondents were rated as moderate quality of life in environmental health domain. Less than half (45.5%) of them were rated as high quality in social relationship domain.

Table 3: Quality of Life from Each Domain

Quality of Life Domains	Low Quality of Life		Moderate Quality of Life		High Quality of Life	
	N	%	N	%	N	%
Physical health domain	69.0	48.3	57.0	39.9	17.0	11.9
Psychological domain	62.0	43.4	74.0	51.7	7.00	4.90
Social domain	34.0	23.8	44.0	30.8	65.0	45.5
Environmental domain	43.0	30.1	91.0	63.6	9.00	6.30

Table 4: Clinical Factors Affecting the Quality of Life

Variables	N	%
Duration of diagnosis of diabetes (years)		
Less than one year	29.0	20.3
1-3	51.0	35.7
4-5	30.0	21.0
Above 5	33.0	23.1
Presence of diabetes-related complication		
Yes	90.0	55.9
No	53.0	44.1
Complications (n=90)		
Neurological complications	27.0	30.0
Kidney complications	7.00	4.90
Eye complications	24.0	26.7
Foot ulcers	6.00	4.20
Cardiovascular complications	13.0	9.10
Other complications	14.0	9.80
physical exercise regularity		
Regularly	35.0	24.5
Irregularly	37.0	25.9
Not done	71.0	49.7
Nutritional therapy		
Yes	88.0	61.5
No	55.0	38.5
Pharmacological therapy		
Yes	125	87.4
No	18.0	12.6
Pharmacological treatment regimen(n=125)		
Insulin	30.0	21.0
Oral hypoglycaemic agents	60.0	42.0
Insulin and oral hypoglycaemic agents	35.0	24.5
Presence of co morbidities		
Yes	125	87.4
No	18.0	12.6
Co morbidities(n=125)		
Diabetes and hypertension	50.0	35.0
Diabetes and obesity	38.0	26.6
Diabetes and chronic kidney diseases	7.00	4.90
Diabetes and sleep disorders	4.00	2.80
Diabetes and depression	9.00	6.30
Diabetes and coronary artery diseases	10.0	7.00
Other co morbidities	7.00	4.90

Research Question Two

What are the clinical factors affecting the quality of life of diabetic patients?

Table 4 above shows that more than one third (35.7%) of them had duration of diagnosis of diabetes between (1-3) years, more than half (55.9%) of the study group mentioned diabetes related complication, three(3) out of every ten (10) (30%) of them had neurological complications, about half (49.7%) did not do physical exercise, less than two third (61.5%) were following nutrition therapy, majority (87.5%) of them were on pharmacological therapy, six(6) out every seven (7), (42%) were on oral hypoglycaemic agents as pharmacological regimen, majority (87.4%) of the study group had co

morbidities with diabetes, more than one third (35%) of them had diabetes and hypertension as their co morbidities.

Table 5: Socio-Economic Factors Affecting the Quality of Life

Variables	N	%
Lack of affordability of formal health care services		
Yes	83.0	58.0
No	60.0	42.0
Lack of social support		
Yes	67.0	46.9
No	76.0	53.1
Diminished ability to acquire employment or develop a career due to suffering from diabetes		
Yes	82.0	57.3
No	61.0	42.7
Spending large quantity of income on medical care due to diabetes		
Yes	99.0	69.2
No	44.0	30.8
Insufficient income		
Yes	82.0	57.3
No	61.0	42.7
Lack of accessibility to health insurance scheme		
Yes	94.0	65.7
No	49.0	34.3

Research Question Three
What are the socioeconomic factors affecting the quality of life of diabetic patients?
As presented in Table 5, more than half (58%, 57.3% and 57.3%) mentioned lack of affordability of formal health care services, diminished ability to acquire employment or develop a career due to suffering from diabetes and insufficient income respectively as socioeconomic factors affecting their quality of life, less than half (46.9%) reported lack of social support, more than two third reported spending large quantity of income on medical care due to diabetes and lack of accessibility to health insurance scheme (69.2% and 65.7%) respectively as socioeconomic factors affecting their quality of life

Discussion of Findings
This study revealed that less than half of the study group had their quality of life rated as good and less than two-thirds of them were satisfied about their health coming in agreement with Bakry (2013) who stated that nearly two thirds of the study group had their quality of life rated as good and less than three-quarters of them were satisfied about their health. These results however disagreed with the study of Khongsdir (2015) who reported that two-fifths of the

study group had their quality of life rated as poor and one third of them were satisfied about their health. These results can be explained that culture promotes endurance, acceptance and adaptation to one's fate (patients do believe that all their life affairs are controlled by God (Almighty Allah); including the presence of illness which could be the reason of these results.

Concerning to the quality of life domains, this study identified that the studied group had low quality of life in physical health domain and moderate quality of life in relation to the psychological health and environmental domains. According to IDF (2013), diabetes mellitus is one of the most prevalent diseases that affect many individuals around the world in epidemic proportions. These results were consistent with Bosić-Zivanović (2011) who found that diabetic patients had low scores in all four domains of quality of life while the physical health domain was the most affected domain. These results were inconsistent with Gholami (2014) who reported that the lowest scores of qualities of life for the study group was the psychosocial domain. This could be explained as diabetic patients had a higher rate of complications that affect the Physical function. Physical function limitations especially due to vision difficulties, peripheral neuropathy, and or heart disease can have a negative impact on quality of life. Also, less than half of the study group had a high quality of life in social relationships domain. This implied that participants had relatively more satisfaction of their personal relationships and social support which has a positive influence on physical and psychological well-being of patients, which is reflected in better quality of life. This result was in accordance with Khongsdir (2015) who found patients had the highest scores in social relationships domain. The difference in the impact of diabetes on social relationship can be attributed to a great extent on difference in culture and tradition (This could be attributed to intimate family relationships in our society).

Concerning clinical factors affecting the quality of life, the present study revealed that more than half (55.9%) of the study group mentioned diabetes-related complication, this is supported by a study conducted by Ibrahim et al (2018) where half of respondents had diabetes-related complication. it was observed that three out of every ten had neurological complications, this is contrary to a study conducted by Odili, Ugboka and Oparah (2010) where majority of the respondents had neurological and renal complication. This could be explained as majority of the respondents had shorter duration of diagnosis of diabetes and the shorter the duration of diabetes the less likely patients will have diabetes-related complications. Regarding physical activity regularity

the present study revealed that nearly half of the respondents had physical activity not regularly done. This result is inconsistent with a study by Arafah and Amin (2010) were majority of the respondents had physical activity regularly done. This could be explained as majority of the respondents had non-formal and primary education which made them less aware about the importance of physical exercise in their lives. Regarding pharmacological therapy less than half of the study groups have taken oral hypoglycaemic drugs while one fifth of them had combination of oral hypoglycaemic agents and Insulin. The results are similar with a Study conducted by Ibrahim (2018) were approximately less than half of the study groups have taken oral hypoglycaemic agents while less than two fifths of them have been treated with oral hypoglycaemic agents and insulin. These results could be explained as metformin remains the optimal drug for monotherapy and its low cost, proven safety record, weight neutrality, and possible benefits on cardiovascular outcomes have secured its place as the favoured initial drug choice and in any patient not achieving an agreed HbA1c target despite intensive therapy. Concerning co morbidities the present study revealed that more than one- third of them had diabetes and hypertension as their co morbidities this result is consistent with a study conducted by Ibrahim (2018) were two-fifths of the respondents had Hypertension as their co morbidities.

Concerning the socio-economic factors affecting the quality of life of the respondents, the present study revealed that more than two-third reported spending large quantity of income on medical care due to diabetes and lack of accessibility to health insurance scheme while more than half reported insufficient income as the socio-economic factors affecting their quality of life. This agreed with a study conducted by You et al (2014) were more than half reported insufficient income, lack of accessibility to health insurance scheme and spending large quantity of income on medical care due to diabetes.

Conclusion and Recommendations

This study concluded that diabetes mellitus has negatively affected all domains of quality of life of the patients at Murtala Mohammed Specialist hospital and recommended that Health care providers do their best to improve quality of life through health education programs to improve life style for diabetic patients through better nutrition, physical activity, and regular checkups of blood sugar. Also training program for health care providers should be offered at regular intervals about improving quality of life of diabetic patients. Screening for diabetes complications is essential for the management of patients with diabetes. Finally, further researches

should be conducted to assess the impact of health education programs as well as how to improve quality of life of diabetic patients.

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