

Original Research Article

Quality of life of diabetic patients in secondary and tertiary health facilities in Delta State, Nigeria

John Edjophe Arute^{1*}, Ogheneovo Clement Aghoja¹, Emily Omotejohwo Okolosi-Patani², Nnamani Monica Nnenna³, Herriet Fejiro Ologide¹

¹Department of Clinical Pharmacy and Pharmacy Administration, ²Department of Pharmaceutical Microbiology and Biotechnology, Faculty of Pharmacy, Delta State University, Abraka, Delta State, ³Department of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy, Madonna University, Elele, Rivers State, Nigeria

*For correspondence: **Email:** arute4john@yahoo.com; **Tel:** +234-8037857451

Sent for review: 15 March 2025

Revised accepted: 22 August 2025

Abstract

Purpose: To investigate the physical and mental composites and associated factors that affect the quality of life of diabetic patients.

Methods: This was a cross-sectional study with respondents sampled from Central Hospital (CH), Warri and Federal Medical Centre (FMC), Asaba. Data was collected using the standardized SF-12 questionnaire, and analyzed using Statistical Package for Social Sciences (SPSS). Student t-test and Chi-square were used to compare means and percentages, respectively. Regression model was used to evaluate factors affecting domain scores.

Results: A total of 240 diabetic patients were sampled in both facilities (120 in CH, and 120 at FMC). Mean age was 61.3 ± 10.8 years in CH and 56.5 ± 12.4 years at FMC. Mean Fasting Blood sugar was 170.6 ± 68.2 mg/dL at CH and 187.1 ± 68.5 mg/dL at FMC. Mental Component Summary was higher than Physical Component Summary in both facilities. Respondents with FBS < 130 mg/dL had higher domain scores. Age, family history, duration of DM, as well as fasting blood sugar, significantly affected patients' quality of life.

Conclusion: This study shows that blood glucose level lower than 130 mg/dL improves domain scores and consequently quality of life. Awareness of various risk factors is encouraged to improve the quality of life.

Keywords: Diabetes mellitus, Glucose, Blood, Quality of Life

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited.

Tropical Journal of Pharmaceutical Research is indexed by Scopus, Chemical Abstracts, Embase, Index Copernicus, EBSCO, African Index Medicus, JournalSeek, Directory of Open Access Journals (DOAJ), African Journal Online, Bioline International, Open-J-Gate and Pharmacy Abstracts

INTRODUCTION

The concept of Quality of Life (QOL) has gained worldwide recognition, especially within the health care system. The operational definition of QOL varies depending on the researcher's perspective (societal or individualistic), theoretical model used, and academic inclination. Some definitions emphasized health and well-being or functional capacity, while others

emphasized satisfaction or success [1]. According to the World Health Organization (WHO), quality of life is defined as an individual's view of their life in relation to their objectives, expectations, standards, and concerns in the context of the culture and value systems in which they live [2]. Quality living is a broad concept comprising physical, mental, social wellbeing and comfort. Diabetes mellitus (DM) is a chronic metabolic disease with increasing prevalence

worldwide. The disease burden is more severe in middle and low-income countries [3]. This is as a result of the high ageing populations, urbanization, changes in cultural and social perspectives, dietary changes, physical inactivity, changes in diagnostic criteria and screening practices, poor treatment facilities, and the high prevalence of overweight groups [4]. Several studies have shown that type 2 diabetes is associated with impaired QOL and all aspects of health-related quality of life (HRQOL) are affected, which may lead to high morbidity and decreased life expectancy [5]. Several services, which include diagnosis, treatment and patient care, referrals, follow-up, assessing for complications according to clinical guidelines and collecting as well as recording the patient information in the medical records, are carried out in diabetic clinics [6]. The never-ending demands of diabetic care, such as careful eating, exercising, frequent blood glucose checks, scheduling and planning, symptoms of low or very high blood glucose, and anxieties about the reality of complications, are all factors that influence quality of life [7]. Numerous studies have found that patients with diabetes mellitus (DM) have a poorer quality of life than healthy people, and the reasons that contribute to this are not well understood. In Nigeria, some factors, such as type of diabetes, insulin use, age, DM-related comorbidities, social position, psychological issues, ethnicity, educational level, understanding of the condition, and kind of support received from others, may interfere with QOL [6]. Assessment of QoL gives an objective evaluation of the disease impact on several components of patients' well-being. These evaluations are very important indices to monitor QOL and identify areas where lapses exist. Thus, this study evaluated the quality of life of diabetic patients attending secondary and tertiary facilities in Delta State and associated factors.

METHODS

Study setting

This study was carried out in Delta State, Nigeria from July 2022 to September 2023. Delta State is an oil and agricultural producing State in Nigeria. It is situated in the Delta region of the South-South geo-political zone, with a population of 4,098,291 (males: 2,674,306; females: 2,024,085). Federal Medical Center (FMC) has an average of 350 beds comprising male and female wards, orthopedic and amenity wards. It has under its services 68 Medical Doctors, 50 Nurses, 30 Pharmacists, 15 Intern Pharmacists, 50 Nurses, 5 Medical Laboratory Scientists, 4 Laboratory Technicians, and other administrative

staff. Central Hospital (CH) Warri, located along Warri/Sapele road, has 30 units/departments with 14 wards listed below. The hospital has 254 beds. The pharmacy has 5 subunits with 6 pharmacists, 4 pharmacists from the National Youth Service Corps, 7 intern pharmacists, and 1 pharmacy technician as of the time of the study. The nursing department had 124 nurses. The laboratory unit had 9 laboratory scientists.

Study design

This was a cross-sectional study aimed at assessing the quality of life of diabetic outpatients attending CH Warri and FMC Asaba in Delta State.

Study population

Diabetic outpatients visiting Central Hospital, Warri and FMC, Asaba.

Determination of sample size

A simple random sampling was used to recruit the 240 participants conveniently who consented to be part of the study.

Ethical approval

Ethical approval was obtained from the Research and Ethics committee of Federal Medical Centre, Asaba and General Hospital, Warri, with reference number (FMC/ASB/A81 VOL XIII/205 and CHW/ECC VOL 1/236), respectively. Patients' consent was obtained and data collected containing patients' information was kept confidential.

Inclusion criteria

Diabetic outpatients older than 18 years, who consented to participate in the study, were included.

Exclusion criteria

Diabetic patients with complications, patients less than 18 years, pregnant women, and those with co-morbidities were excluded.

Data collection instrument

Data collection instrument was the validated United Kingdom SF-12 health survey, standardized to fit a wide range of populations. It is a three-page questionnaire divided into aspects that affect general health, activities performed by the person, how patients' health affects their emotional well-being, and how much

pain interferes with the patients' physical health. The SF-12 was administered to the patients who had earlier been enrolled in this study. Data was summarized into the physical composite scale and the mental composite scale. Blood glucose levels were recorded as reported.

Data analysis

Data collected was entered into Quality Metric SF-12 V 2 data quality evaluation software scoring system for computing Physical Composite Summary (PCS) and Mental Component Summary (MCS). Both PCS and MCS are graded from 0 to 100. Higher scores indicate better physical and mental health, respectively. Data entry, analysis was done using SPSS version 22.0. Demographic and clinical characteristics were analyzed using descriptive statistics. Multiple regression was used to identify significant predictors of quality of life. The

student's t-test was used to assess variances in PCS and MCS scores. $P < 0.05$ was considered statistically significant.

RESULTS

Socio-demographic and clinical characteristics of respondents.

The respondents were drawn equally from both facilities, 120 (50 %) each. Majority of the respondents in FMC, Asaba, were within 21 - 30 years and > 61 at CH, Warri (Table 1).

Baseline characteristics of the respondents

Average fasting blood sugar (FBS) was >170mg/dL in both facilities and majority had DM duration of < 5 years (Table 2).

Table 1: Socio-demographic and clinical characteristics (n = 240)

Variable	Sub-variable	Health Facilities	
		CH, Warri (N=120, 50%)	FMC, Asaba (N=120, 50%)
Age	18-20	0(0%)	15(12.5%)
	21-30	10(8.3%)	42(35%)
	31-40	25(20.8%)	3(2.5%)
	41-50	30(25%)	9(7.5%)
	51-60	22(18.3%)	27(22.5%)
	>61	33(27.5%)	24(20%)
Sex	Male	43(35.8%)	44(36.7%)
	Female	77(64.2%)	76(63.3%)
Marital status	Married	106(88.3%)	85(70.8%)
	Divorced	4(3.3%)	15(12.5%)
	Widowed	10(8.3%)	20(16.6%)
Family History of diabetes	Yes	56(46.7%)	66(55%)
	No	64(53.3%)	54(45%)
Duration of diabetes (years)	<5	59(49.2%)	39(32.5%)
	6-10	41(34.2%)	33(27.5%)
	>11	20(16.7%)	48(40%)
Treatment Options	OHD	87(72.5%)	61(50.8%)
	Insulin	10(8.3%)	11(9.2%)
	OHD and insulin	23(19.2%)	48(40%)

*OHD: Oral Hypoglycaemic Drugs; CH: Central Hospital; FMC: Federal Medical Centre

Table 2: Baseline characteristics of the respondents

Variable	Sub-variable	Health Facilities	
		CH, Warri (N=120, 50%)	FMC, Asaba (N=120, 50%)
Age (years)		61.3 ± 10.8	56.5 ± 12.4
Duration of diabetes (years)	<5	59(49.2%)	39(32.5%)
	6-10	41(34.2%)	33(27.5%)
	>11	20(16.7%)	48(40%)
FBS (mg/dL)	<130	26(21.7%)	33(27.5%)
	130-150	28(23.3%)	33(27.5%)
	151-170	8(6.7%)	6(5.0%)
	171-190	8(6.7%)	5(4.2%)
	>190	50(41.7%)	43(35.8%)
Average FBS (mg/dL)		170.6 ± 68.2	187.1 ± 68.5

*FBS: Fasting Blood Sugar; CH: Central Hospital; FMC: Federal Medical Centre

Table 3: Distribution of SF-12 domain scores

SF-12 Component	CH, Warri	FMC, Asaba	p-value
Physical functioning (PF)	42.92±22.45	46.82±17.29	0.023
Role Physical (RP)	27.38±12.33	29.55±9.98	0.047
Role Emotional (RE)	29.54±7.07	29.09±9.21	0.073
Mental Health (MH)	69.69±43.13	78.18±15.00	0.063
Bodily Pain (BP)	30.92±11.79	32.27±11.10	0.127
General Health (GH)	24.46±10.09	30.45±7.85	0.180
Vitality (VT)	36.00±14.98	33.18±11.70	0.396
Social Functioning (SF)	33.23±9.68	36.36±7.27	0.019
Physical Component Summary (PCS)	31.42±7.02	34.77±7.02	0.150
Mental Component Summary (MCS)	42.15±16.08	44.20±19.79	0.343

*Significance level: $p < 0.05$; CH: Central Hospital; FMC: Federal Medical Centre

Table 4: Association of domain scores with glycaemic control

SF-12 Component	<130mg/dL		>130mg/dL		P-value
	CH, Warri	FMC, Asaba	CH, Warri	FMC, Asaba	
Physical functioning (PF)	49.43±8.98	50.12±14.65	21.84±10.65	39.07 ± 8.30	0.626
Role Physical (RP)	48.60±4.11	35.54±10.54	20.83±12.30	27.89±11.25	0.832
Role Emotional (RE)	35.60±4.11	32.54±11.12	39.35±13.01	26.26±10.09	0.814
Mental Health (MH)	59.65±10.11	80.65±10.32	37.87±13.65	59.89±11.43	0.722
Bodily Pain (BP)	27.54±13.65	20.43±13.59	27.37±18.54	24.76±28.30	0.931
General Health (GH)	39.54±13.65	42.45±15.32	21.52±14.35	37.89±11.32	0.874
Vitality (VT)	38.43±10.61	43.87±12.05	42.84±8.54	34.98±10.21	0.809
Social Functioning (SF)	40.45±12.89	46.54±15.65	42.86±13.54	28.89±8.32	0.897
Physical Component Summary (PCS)	41.28±8.83	37.14±10.94	21.52±8.31	32.40±6.19	0.041*
Mental Component Summary (MCS)	43.53±9.46	50.90±17.96	40.73±2.18	37.50±13.31	0.940

*Significance level: $p < 0.05$; CH: Central Hospital; FMC: Federal Medical Centre

Table 5: Factors affecting physical component summary and mental component summary

Model	T	P-value	95.0% Confidence Interval for B	
			Lower bound	Upper bound
1	41.909	0.0001	5.124	5.523
2	3.232	0.001	1.132	5.121
3	2.250	0.025	0.282	2.325
4	6.765	0.002	1.243	3.465

Distribution of SF-12 domain scores

There was no significant difference in domain scores across the health facilities ($p > 0.05$). However, there was significant difference in physical functioning, role physical and social functioning across the facilities was statistically significant (Table 3).

Association of domain scores with glycaemic control

The association of domain scores and glycaemic control was also investigated. Respondents with fasting blood sugar < 130 mg/dL had higher domain scores. Differences between the health facilities were not significant (Table 4).

Socio-demographic factors affecting PCS and MCS scores

The results revealed that age, family history, duration of DM, Family history, and fasting blood sugar significantly predict quality of life (Table 5).

DISCUSSION

Diabetes mellitus (DM) places a substantial burden on affected individuals by influencing physical, psychological and social aspects of QOL. The progressive nature of type 2 DM and the associated risk for developing chronic complications certify that insulin use will be a reality for most diabetic patients. Glycemic control becomes an important measurement for preventing long-term complications and providing

better QOL. In this study, the majority of type 2 diabetic patients were over 50 years old, with a diabetes duration of less than 5 years in CH, Warri, and more than 11 years in FMC, Asaba, which was comparable to the research work of Al-Arabi [8] in the Al-Khobar area. Patients above the age of 50 are more likely to be diagnosed with diabetes. However, everyday lifestyle changes such as diet and exercise may enhance health-related quality of life [9]. Research has revealed that the QOL of young individuals is typically greater than that of the elderly. Also, social support has been identified as another important aspect in diabetes patients' QOL [10]. More social support, which is prevalent among younger respondents, is associated with better quality of life [11]. Furthermore, it is well established that diabetes patients who receive more social support from families and friends are more likely to stick to their diet and participate in physical activity. They also have reduced diabetes-related discomfort. Diabetes should not be treated as a disease, but rather as one of various ailments that might affect an elderly person. Findings from this study revealed that diabetes patients had low quality of life across all domain scores on the PCS and MCS, as evaluated by the SF-12v2 questionnaire. This supports previous research by Qionghua *et al* [12]. Also, individuals with FBS > 130 mg/dL had lower QOL. The impact of big vessel and microvascular problems on patients' physical and mental capabilities may explain the decline in health-related quality of life [13]. Age, BMI, and the existence of comorbidities have all been demonstrated to have a significant influence on many aspects of quality of life [13]. Health-related quality of life (HRQOL) would deteriorate as diabetic symptoms worsened [14]. Although using the SF-36 scale, a cohort study found that the elimination of hyperglycemia among 94 patients following therapy and glycemic control was related to improvements in HRQOL, notably in physical and social functioning, which is consistent with the findings of our investigation [15]. Therefore, glycemic management has become an essential metric for reducing long-term problems and improving diabetic patients' quality of life. Glycemic control has also been observed to impact the QoL of people with DM [16]. Study by Shim *et al* in Singapore showed that poorer health-related QoL was found to be associated with glycated hemoglobin (HbA1C) values > 6.5 %, indicating the need to achieve better glycaemic control for effective disease management [16]. This study further shows that age, family history, duration of DM, as well as fasting blood sugar affected patients' quality of life. In a previous study, lower-scoring domain scores were associated with longer diabetes

duration, family history, and probably poor compliance with doctors' advice as it relates to therapeutic management [17].

Limitations of this study

This study utilized a small sample size, and as such, the results may not be applied to larger samples. Although this study was conducted in two major health facilities in Delta State, the results may not tell what is obtainable in other settings.

CONCLUSION

This study has shown that improving the quality of life of diabetic patients would require better control of blood glucose levels. However, the quality-of-life scores in this population were poor and dependent on fasting blood sugar. As a result, improving glycemic control will proportionately improve patients' quality of life.

DECLARATIONS

Acknowledgement/Funding

The authors wish to appreciate the ethical committee of CH, Warri and FMC, Asaba for granting the approval to conduct this research.

Author contributions

Concept and design by Arute JE, acquisition of data by Ologide HF, analysis and interpretation of data, Critical revision of the paper for important intellectual content by Nnamani Monica Nnenna, and Aghoja CO.

Ethical approval

Ethical approval was obtained from the Research and Ethics committee of Federal Medical Centre, Asaba and General Hospital, Warri, with reference number (FMC/ASB/A81 VOL XIII/205 and CHW/ECC VOL 1/236), respectively.

Conflict of interest

The authors declare no conflict of interest.

REFERENCES

1. Taillefer MC, Dupuis G, Roberge MA, LeMay S. Health-related quality of life models: systematic review of the literature. *Soc Indic Res* 2003; 64(2): 293-323.
2. World Health Organization. *The Development of the World Health Organization Quality of Life Assessment*

- Instrument (WHOQOL). WHO Division of Mental Health, Geneva: 1994: 27.
3. Nyanzi R, Wamala R, Atuhaire LK. Diabetes and quality of life: a Ugandan perspective. *J Diabetes Res* 2014; 2014: 106219. doi:10.1155/2014/106219.
 4. Dunachie S, Chamnan P. The double burden of diabetes and global infection in low and middle-income countries. *Transact Royal Soc Trop Med Hyg* 2019; 113(2): 56-64.
 5. Gillani SW, Ansari IA, Zaghloul HA, Sulaiman SAS, Rathore HA, Baig MR, Abdul MIM, Althagfan S. Predictors of health-related quality of life among patients with type II Diabetes mellitus who are insulin users: A multidimensional model. *Curr Ther Res Clin Exp* 2019; 90: 53-60. doi: 10.1016/j.curtheres.2019.04.001. PMID: 31193026; PMCID: PMC6514425.
 6. Azizi F, Gouya MM, Vazirian P, Dolatshahi P, Habibian S. The diabetes prevention and control programme of the Islamic Republic of Iran. *East Mediterr Health J* 2003; 9(5-6): 1114-1121. PMID: 16450545.
 7. American Diabetes Association. <https://www.diabetes.org/healthy-living/medication-treatments/insulin-other-injectables/insulin-basics>. Assessed 6th September 2024.
 8. Kiadaliri A, Najafi B, Mirmalek-Sani M. Quality of life in people with diabetes: A systematic review of studies in Iran. *J Diabetes and Metab Disord* 2013; 12(1): 54-64.
 9. Polonsky WH, Anderson BJ, Lohrer PA, Welch G, Jacobson AM, Aponte JE, Schwartz CE. Assessment of diabetes-related distress. *Diabetes Care* 1995; 18(6): 754-760. doi: 10.2337/diacare.18.6.754. PMID: 7555499.
 10. Kirk AF, Higgins LA, Hughes AR, Fisher BM, Mutrie N, Hillis S, MacIntyre PD. Randomized, controlled trial to study the effect of exercise consultation on the promotion of physical activity in people with Type 2 diabetes: a pilot study. *Diabet Med* 2001; 18(11): 877-882.
 11. Franciosi M, Pellegrini F, De Berardis G, Belfiglio M, Cavaliere D, Di Nardo B. The impact of blood glucose self-monitoring on metabolic control and quality of life in type 2 diabetic patients. *Diabetes Care* 2001; 24: 1870-1877.
 12. Zeng Z, Wang X, Chen Y, Zhou H, Zhu W, Xiong X, Tang J, Zhao Q. Health-related quality of life in Chinese individuals with type 2 diabetes mellitus: a multicenter cross-sectional study. *Health Qual Life Outcomes* 2023; 21(1): 100. doi: 10.1186/s12955-023-02183-1. PMID: 37633882; PMCID: PMC10464323.
 13. Amer HA, Attia ZT, Ahmed AB, Mohammed S. Health-related quality of life in type 2 diabetic patients. *Ann Saudi Med* 2008; 28(5): 352-360.
 14. Tekir O, Çevik C, Özsezer Kaymak G, Kaya A. The effect of diabetes symptoms on quality of life in individuals with type 2 diabetes. *Acta Endocrinol (Bucharest)* 2021; 17(2): 186-193. doi: 10.4183/aeb.2021.186. PMID: 34925566; PMCID: PMC8665249.
 15. Goddijn PP, Bilo HJ, Feskens EJ, Groenier KH, Van Der Zee KI, Meyboom-De Jong B. Longitudinal study on glycaemic control and quality of life in patients with Type 2 diabetes mellitus referred for intensified control. *Diabet Med* 1999; 16(1): 23-30. DOI: 10.1046/j.1464-5491.1999.00007.x.
 16. Shim YT, Lee J, Toh MP, Tang WE, Ko Y. Health-related quality of life and glycaemic control in patients with Type 2 diabetes mellitus in Singapore. *Diabet Med* 2012; 29: e241-248.
 17. Pouwer F, Beekman AT, Lubach C, Snoek FJ. Nurses' recognition and registration of depression, anxiety and diabetes-specific emotional problems in outpatients with diabetes mellitus. *Patient Educ Couns* 2006; 60: 235-240.