Asonye *et. al.,* Babcock Univ. Med. J.2025 8(2):418-427
https://doi.org/10.38029/babcockuniv.med.j..v8i2.905
eISSN: 2756-4657

RESEARCH ARTICLE OPEN ACCESS

Self-care behaviours, distress and health-related quality of life among patients with type 2 diabetes mellitus attending the teaching hospitals in Ogun state

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Submitted: 11th May 2025
Accepted: 17th August 2025
Published: 31st December 2025
ID: Orcid ID

Abstract
Objective: Health-Related Quality of Life (HRQoL) is a multidimensional concept encompassing physical, mental, emotional, and social well-being. Individuals with Type 2 Diabetes Mellitus (T2DM) often face diabetes-related distress (DRD) due to the demands of long-term treatment, which can lead to poor self-care behaviours and diminished HRQoL. This study aimed to investigate the combined impact of diabetes self-care and distress on health-related quality of life among patients with type 2 diabetes mellitus (T2DM).
Methodology: A descriptive cross-sectional study was conducted among 219 patients with type 2 diabetes mellitus (T2DM) attending two teaching hospitals in Ogun State, Nigeria. Data were collected using validated questionnaires. DSMQ, DDS-17, and WHOQOL-BREF. Descriptive and multiple regression analyses were performed at a 5% significance level.
Results: Participants had a mean age of 56.1 ± 9.7 years. Diabetes self-care behaviour was optimal, with a mean DSMQ score of 7.27 ± 1.40 (95% CI: 7.08–7.46), while diabetes distress levels were moderate, with a mean DDS score of 2.10 ± 0.82 (95% CI: 1.97–2.19). Participants reported high overall perceptions of quality of life (80.50 ± 18.00) and health (65.91 ± 22.09). Domain-specific HRQoL scores were moderate across physical health (62.08 ± 13.02), psychological (63.50 ± 12.91), social relationships (63.32 ± 19.70), and environment (62.44 ± 15.50). Both diabetes self-care behaviour and diabetes distress significantly predicted HRQoL ($F(3, 205) = 15.8$, $p < 0.05$).
Conclusion: Diabetes self-care behaviours and distress significantly influenced HRQoL. Routine psychological screening and targeted interventions are recommended to reduce DD and improve HRQoL among T2DM patients.

Keywords: Diabetes distress, Diabetes self-care behaviour, Health-related quality of life (HRQoL), Type 2 diabetes mellitus (T2DM)

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Plain English Summary
This study looked at how people with Type 2 Diabetes take care of themselves and how stress from their illness affects their quality of life. We talked to 219 patients from two hospitals in Ogun State, Nigeria. Most were around 56 years old, women, and married. Most people managed their diabetes well, especially their blood sugar, but many felt some stress because of their diabetes. Overall, their quality of life was good in areas like health, feelings, relationships, and living conditions. We found that people who took better care of themselves felt better, but stress from diabetes made their quality of life worse. The study shows that helping people reduce stress and care for themselves can improve their lives.

Background
Health-Related Quality of Life (HRQoL) is a vital measure of health outcomes, encompassing physical, mental, emotional, and social domains. Individuals with Type 2 Diabetes Mellitus (T2DM) experience a significant reduction in HRQoL compared to those without diabetes, negatively impacting their physical, psychological, and social well-being (1). Studies in Ghana and Nigeria have consistently reported a general decline in the quality of life among individuals living with diabetes (2, 3).
Effective diabetes self-care behaviours—including healthy eating, physical activity, blood glucose monitoring, medication adherence, problem-solving, coping strategies, and risk reduction—have enhanced quality of life and prevented severe complications (4). However, evidence from Nigeria (5) and elsewhere (6, 7) indicates poor adherence to self-care practices, mainly due to limited knowledge and diabetes-related distress (8).
The burden of diabetes distress has risen globally, with one in five individuals with T2DM affected (9). Nigerian studies confirm the presence of high diabetes distress among patients, contributing to emotional struggles such as fear, fatigue, and perceived worthlessness (10, 11). Higher levels of diabetes-specific emotional distress are linked to lower HRQoL (12).
Despite these findings, there is a paucity of local and international studies examining the interaction between diabetes self-care behaviours, diabetes-related distress, and HRQoL among patients with T2DM. This gap is particularly critical in resource-limited settings where patients bear much care responsibility. Therefore, this study investigates the relationship between diabetes self-care behaviours, diabetes distress, and health-related quality of life among patients with T2DM attending two teaching hospitals in Ogun State, Nigeria. Findings from this study will provide evidence necessary to develop targeted interventions that promote optimal glycaemic control and enhance patient well-being.
Becker's "Health Belief Model" was used to provide the theoretical underpinning for this study. The model is a framework for explaining how people's behaviour tends to align with their health, physical and mental well-being (13). The Health Belief Model considers individual perceptions, modifying factors, and the likelihood of an action occurring. The patient's perceptions of type 2 diabetes mellitus and self-care practice can affect the adoption and maintenance of self-care behaviours.

Methodology
Research Design
This was a descriptive cross-sectional study.

Research Settings
This study was conducted at Babcock University Teaching Hospital (BUTH) in Ilisan-Remo and Olabisi Onabanjo University Teaching Hospital (OOUTH) in Sagamu, Ogun State, Nigeria. BUTH, formerly known as Adventist Medical Centre, is a 200-bed tertiary hospital affiliated with Babcock University, established by the Seventh-day Adventist Church. It serves as a major referral centre for surrounding local government areas and hosts various departments, including the Endocrinology, Diabetes, and Metabolism Unit, which manages patients with diabetes mellitus.
OOUTH, located in Sagamu, is a 250-bed tertiary hospital established in 1986. It offers specialised services across disciplines, including surgery, medicine, paediatrics, obstetrics, and gynaecology. The hospital also features a specialised Dame Adebutu Diabetes Care Centre, dedicated to providing comprehensive diabetes management.

Population
The target population were 260 patients diagnosed with type 2 diabetes mellitus attending the diabetes clinics at the teaching hospitals, and who met the inclusion criteria.

Inclusion criteria
1. Patients aged 21 years and above
2. All patients diagnosed with type 2 diabetes for at least 3 months

Exclusion criteria
1. Patients who are chronically ill and admitted to the hospital
2. Type 1 Diabetes or another type of diabetes (other than T2DM)
3. All patients with hyperglycaemia resulting from Gestational Diabetes Mellitus, Cushing syndrome, and paraneoplastic syndrome are excluded from the study.

Sample Size and Sampling Technique
The sample size of 219 (10% attrition rate included) was determined using the Leslie Kish (1965) formula for a single proportion with an absolute error of 5% allowed and a prevalence of 15.3% from a study conducted in Lagos (14). A stratified proportionate to size sampling technique was used to allocate the total sample size of 219 across the two hospitals - Babcock University Teaching Hospital (BUTH), with 60 patients, and Olabisi Onabanjo University Teaching Hospital (OOUTH), with 200 patients. Based on proportional allocation, approximately 51 participants were selected from BUTH and 168 from OOUTH. Within each hospital, total enumeration was employed—meaning all eligible and consenting patients were recruited until the required number for each stratum was achieved.

Instrument for Data Collection
A 69-item questionnaire was used, divided into four sections. Section A, developed by the researcher, contained 10 items on socio-demographic characteristics such as age, gender, education, employment, income, ethnicity, marital status, duration of diabetes, and lifestyle habits. Section B assessed diabetes-related self-care behaviours using the validated Diabetes Self-Management Questionnaire (DSMQ), a 16-item tool covering glucose management, dietary control, physical activity, and healthcare use. Items were rated on a 4-point Likert scale, with higher transformed scores (0–10) indicating better self-care. A cut-off score ≤ 6.0 (total score) facilitates the identification of suboptimal self-care. The reliability results showed a high internal consistency for all the DSMQ scales: Sum scale α = 0.96; Glucose Management = 0.91; Dietary Control = 0.88; Physical Activity = 0.89; Health-Care Use = 0.73. Section C evaluated diabetes-related distress using the Diabetes Distress Scale-17 (DDS-17), a 17-item tool divided into four subscales. Responses were rated on a 6-point Likert scale, with scores categorised as little/no distress (<2.0), moderate distress (2.0–2.9), and high distress (≥3.0). The Diabetes Distress Scale-17 (DDS-17) overall Cronbach's α was 0.920 (range = 0.784–0.859 for each subscale). Section D assessed health-related quality of life (HRQOL) using the WHOQOL-BREF, a 26-item instrument measuring physical health, psychological health, social relationships, and environmental health. Each domain score was transformed to a 0–100 scale, with HRQOL categorised as low (≤45), moderate (45–65), or high (>65). Higher scores indicated better quality of life. The Cronbach's alpha coefficients were acceptable for all domains of WHOQoL-BREF: Physical = 0.69; Psychological = 0.76; Social = 0.80; Environmental = 0.86.

Method of Data Collection
Research Assistants (RAs) were recruited and trained to assist in data collection. The researcher also met with the consultant endocrinologist and Chief Nursing Officer (CNO) to discuss study details, timelines, and participant recruitment. Participants were fully informed about the study's purpose and procedures, assured of no remuneration, and provided written informed consent before participating. Questionnaires were administered and retrieved by the researcher and RAs over 12 weeks.

Method of Data Analysis
The data that was retrieved was analysed using IBM SPSS version 25, with initial steps including data cleaning and reverse scoring as needed. Univariate analysis (mean and standard deviations), Bivariate analysis (Pearson's correlation), and Multivariate analysis (multiple linear regression) were employed with significance at $p < 0.05$. Internal consistency reliability was assessed across all instruments, and assumptions for regression analyses (normality, multicollinearity, homoscedasticity, and linearity) were tested.

Results
A total of two hundred and nineteen (219) participants were recruited for this study, but two hundred and nine (209) responded, thus representing a 95% response rate.
Table 1 shows that most of the respondents were of the Yoruba tribe (192 (91.9%)), aged 61 and above years (88 (42%)), and belonged to the female gender 149 (71.3%). About 132 (63.2%) were of the Christian faith, and 77 (36.8%) practised Islam. About 83 (39.7%) of the respondents had tertiary education, and about 193 (92.3%) were married, 114 (54.5%) had a monthly income above minimum wage (#30, 000 and above), 51 (24.4%) earn within minimum wage

(#30, 000), and 44 (21.1%) earn below minimum wage (less than #30, 000). In addition, 92.3% (193) of the respondents do not smoke, or consume alcohol, and about 120 (57.4%) had been diagnosed and living with type 2 diabetes mellitus for less than 10 years, 63 (30.1%) between 10 – 20 years, and 26 (12.4%) greater than 20 years respectively.

Table 1: Sociodemographic and Clinical Characteristics

	Variables	Frequency N	Percentage %
Age Mean age: 56.1 ± 9.7 years	Less than 30	5	2.4
	31 – 40	7	3.3
	41 – 50	41	19.6
	51 – 60	68	32.5
	61 and above	88	42.1
	Total	209	100
Gender	Male	60	28.7
	Female	149	71.3
	Total	209	100
Religion	Christian	132	63.2
	Islam	77	36.8
	Total	209	100
Ethnicity	Yoruba	192	91.9
	Igbo	15	7.2
	Hausa	2	1.0
	Total	209	100
Educational Status	Primary School Level	53	25.4
	Secondary Level	73	34.9
	Tertiary Level	83	39.7
	Total	209	100
Marital Status	Single	8	3.8
	Married	193	92.3
	Divorced	4	1.9
	Widow/Widower	4	1.9
	Total	209	100
Monthly Income	Above minimum wage (#30,000 and above)	114	54.5
	Within minimum wage (#30,000)	51	24.4
	Below minimum wage (less than #30,000)	44	21.1
	Total	209	100
Smoking Status	Smoker	16	7.7
	Non-smoker	193	92.3
	Total	209	100
Alcohol Consumption	Alcoholic	16	7.7
	Non-alcoholic	193	92.3
	Total	209	100
Duration of type 2 diabetes mellitus	Less than 10 years	120	57.4
	10 – 20 years	63	30.1
	Greater than 20 years	26	12.4
	Total	209	100

(Source: Field Work, 2023)

In Table 2, the participants' overall diabetes self-care, measured using the DSMQ, had a mean raw score of 34.90 ± 6.75 (95% CI: 33.99–35.81) and a transformed mean score of 7.27 ± 1.40 (95% CI: 7.08–7.46). Based on the DSMQ cut-off (> 6.0 indicating optimal self-care), an estimated 81.8% of participants demonstrated optimal self-care behaviours, while 18.2% had suboptimal self-care. Across the self-care domains, glucose management had the highest transformed mean (8.00 ± 1.90), while physical activity was lowest (6.64 ± 2.90).

Diabetes-related distress, assessed using the DDS-17, showed a total mean score of 35.30 ± 13.86 (95% CI: 33.41–37.19), with a transformed mean of 2.10 ± 0.82 (95% CI: 1.97–2.19), placing the average participant in the moderate distress range (2.0–2.9). Estimated proportions by category were: little/no distress (< 2.0) in 45.1% of participants, moderate distress in 38.4%, and high distress (≥ 3.0) in 13.6%. Among subscales, emotional burden recorded the highest transformed mean (2.50 ± 0.50), while physician-related distress was lowest (1.80 ± 1.00).

Table 2: Diabetes Self-Care Behaviours and Diabetes-Related Distress among Participants (N = 209)

Domain / Subscale	Mean ± SD	95% CI (Mean)	Transformed Mean ± SD	95% CI (Transformed)	Estimated Category Breakdown (%)
Diabetes Self-Care (DSMQ)					
Overall Self-Care	34.90 ± 6.75	33.99 – 35.81	7.27 ± 1.40	7.08 – 7.46	Optimal (>6.0):
Dietary Control	8.82 ± 2.40	8.50 – 9.15	7.34 ± 2.00	7.07 – 7.61	81.8%;
Glucose Management	12.00 ± 2.92	11.59 – 12.41	8.00 ± 1.90	7.74 – 8.26	Suboptimal (≤6.0):
Physical Activity	5.98 ± 2.59	5.63 – 6.33	6.64 ± 2.90	6.24 – 7.04	18.2%
Physician Contact	6.08 ± 1.87	5.82 – 6.34	7.60 ± 2.30	7.29 – 7.91	
Diabetes-Related Distress (DDS-17)					
Total Distress Score	35.30 ± 13.86	33.41 – 37.19	2.10 ± 0.82	1.97 – 2.19	Little/No (<2.0):
Emotional Burden	12.69 ± 5.01	12.01 – 13.38	2.50 ± 0.50	2.54 – 2.68	45.1%; Moderate
Physician-Related Distress	7.03 ± 3.96	6.49 – 7.57	1.80 ± 1.00	1.62 – 1.89	(2.0–2.9): 38.4%;
Regimen-Related Distress	10.23 ± 4.91	9.57 – 10.90	2.00 ± 0.99	1.91 – 2.18	High (≥3.0):
Interpersonal Distress	5.34 ± 3.41	4.88 – 5.80	1.80 ± 1.14	1.63 – 1.93	13.6%

(Source: Field Work, 2023)

The present study revealed that the overall HRQoL of T2DM patients in the physical health = 62.08±13.02, psychological = 63.50±12.91, social relationship = 63.32±19.70, and environmental domain = 62.44±15.50 were above the middle (i.e., 50) of the possible score range (0 – 100 for WHOQOL-BREF at a scale of 100 (Table 3). In addition, individuals' overall perception of their quality of life (QoL) and health were predominantly above average, with scores of 80.50±18.00 and 65.91±22.09, respectively. About 80.5% 0f the study participants had a good overall perception of their quality of life (QoL). The skewness-to-standard error ratios for the Physical, Psychological, and Overall Health domains were within ±1.96, indicating approximately normal distributions, while the Social, Environment, and Overall QoL domains showed mild but statistically significant negative skewness.

Table 3: Descriptive Summary of the Domains of Health-Related Quality of Life (HRQoL)

Domain	Mean ± SD	Skewness	Std. Error	Skew/SE
Physical	62.08±13.02	-.287	.168	-1.708
Psychological	63.50±12.91	-.117	.168	-0.696
Social	63.32±19.70	-.578	.168	-3.440
Environment	62.44±15.50	-.396	.168	-2.357
Overall perception of quality of life (QoL)	80.50±18.00	-.591	.168	-3.518
Overall perception of their health	65.91±22.09	-.189	.168	-1.125

Source: Field Work, 2023)

A multiple linear regression was conducted to examine whether diabetes self-care (DSMQ score) and diabetes distress (DDT score) significantly predicted health-related quality of life (HRQoL) among participants (Table 4). The model was statistically significant, $F(2, 206) = 15.81$, $p = .001$, explaining 18.8% of the variance in HRQoL (adjusted $R^2 = .176$). Diabetes self-care was a positive and significant predictor of HRQoL ($B = 1.15$, $SE = 0.48$, $\beta = .15$, $p = .019$), uniquely accounting for approximately 2.1% of the variance in HRQoL. Conversely, diabetes distress was a

negative and stronger predictor (B = -1.27, SE = 0.22, β = -.37, p < .001), uniquely explaining approximately 13.7% of the variance. The results indicate that while engaging in optimal self-care behaviours is beneficial, reducing distress may substantially improve overall quality of life among individuals with diabetes.

Table 4: Multiple Linear Regression Predicting Health-Related Quality of Life from Diabetes Self-Care and Diabetes Distress

Model		Unstandardized Coefficients	Standardized Coefficients	T	Sig.	Mean Square	F (Sig.)
		Beta	Std. Error	Beta				
1	(Constant)	65.287	4.937		13.224	.001	1856.287	15.809
	DSMQ	1.150	.484	.152	2.374	.019		(0.001)
	DDT	-1.274	.219	-.370	-5.812	.000		
R Square = .188, Adjusted R Square = 0.176								

p-value < .05; (Source: Field Work, 2023)

Discussion

The findings showed a mean age of 56 ± 11 years, most participants were females (71.3%), and married (92.3%). Though the prevalence of type 2 diabetes is characterised by a gender difference, with the overall global prevalence of diabetes higher in men, there are more women with type 2 diabetes than men (15). The gender difference in the prevalence of diabetes is reversed according to the stage of reproductive life. In other words, there are more men diagnosed with diabetes before puberty, while there are more women with diabetes after the age of menopause and in old age. The combined effect of more elderly women than men in most populations and the increasing prevalence of diabetes with age is the rationale for this observation (16).

The self-management is probably the most important factor contributing to achieving euglycaemia. The present study results revealed that 81.8% of participants demonstrated optimal self-care behaviours, while 18.2% had suboptimal self-care. The individual domains were optimal, with glucose management having the highest transformed mean, while physical activity was the lowest. This is consistent with a similar previous study in Nigeria (17). However, the result is higher than similar studies conducted in Indonesia (18), Saudi Arabia (19), Vietnam (20), and Nepal (21). The possible reason for this might be that the majority of the participants in this study had a tertiary education (39.7%). Educated persons have an increased interest in their health promotion, for which they become aware and follow the desirable self-care practices. Illiterate patients were three times more likely to perform poor self-care activities than literate patients (21).

Furthermore, the present study results revealed a moderate level of diabetes distress among the participants. The result is similar to a previous study (22) that revealed an overall prevalence of diabetes-related distress (DRD) among the participants to be 118 (36.8%), in which the majority (101; 31.5%) were in moderate distress on a DDS-17 scale. The finding of this present study is relatively high in comparison with previous studies conducted in Saudi Arabia (22.3%) (23) and Thailand (8.9%) (24). These differences in diabetes distress (DD) prevalence could be explained by sample size, health-care system, care setting, sociodemographic variables (education level) and other forms of stressors (10).

In addition, numerous studies among patients with diabetes have found a higher prevalence of diabetes-related distress (DRD) than the present study. For example, studies conducted using the DDS-17 scale in Yogyakarta, Indonesia (18) showed that 45.5% experienced moderate distress. Studies in Ghana (25) and Nigeria (26) reported that 44.7% and 51.9% of patients had high levels of diabetes-related distress (DRD), respectively. This discrepancy between the previously reported diabetes-related distress (DRD) magnitude and the current prevalence might result from better family/social support and patient-nurse/doctor relationship, and patients might have under-rated their level of distress. The differences might also be due to variations in coexisting medical problems besides diabetes among study participants.

Further assessment of the individual domains revealed that distress from emotional burden had a mean of 2.5, which is in line with a previous study that found the average score in this domain was 2.0 (18). The second domain is stress related to Physicians/healthcare providers, with a mean score of 1.8. The average score on this domain was one of the lowest among the four domains. The results of this study were in contrast with previous were in contrast with previous were in

contrast with a previous study that found the average score in this domain to be 2.1 (18). The third domain is regimen-related distress, which has a mean score of 2.0, and the result is consistent with previous studies that found stress in this domain to be moderate, with an average score of 2.6 (27). In another similar study (18), the result revealed a 1.8 mean score in the regimen-related distress, which contrasts with the present study. The fourth domain, interpersonal distress, had a mean score of 1.8 (little/no distress), which is in contrast with previous research that found this domain to be at a moderate level with a mean score of 2.0 (18) and 2.1 (27).

The present study revealed that patients' perceptions of their overall quality of life (QoL) and overall health were high, with mean scores of 80.50 ± 18.00 and 65.91 ± 22.09, respectively. A similar previous study (28) shows that individuals' perception of their QoL and health was predominantly average (i.e., 50), and nearly one-quarter of the participants rated their QoL as poor, and one-quarter were unsatisfied with their physical health. Also, an above-average score was recorded from a previous study conducted in Nigeria (2), which shows a mean score for the overall QoL of the subjects was high (75.6±19.4).

Further assessment in the present study revealed that participants experienced a moderate quality of life across all WHOQOL-BREF domains: physical health (62.08 ± 13.02), psychological (63.50 ± 12.91), social relationships (63.32 ± 19.70), and environment (62.44 ± 15.50). These finding contrasts sharply with a previous study conducted in Bangladesh (28), which reported below-average scores among T2DM patients, with mean (± SD) domain scores of 37.2 ± 20.5 for physical health, 44.2 ± 21.0 for psychological well-being, 39.6 ± 23.2 for social relationships, and 41.6 ± 19.5 for the environmental domain.

Similarly, in West Java (29) and in Iran (30) observed that most T2DM patients had poor QoL in three domains – physical, psychological, and environmental. The high scores seen across the QoL domains in the present study may be attributed to the increased number of participants who have a tertiary education. It may also be due to subsidised treatment enjoyed by patients in one of the centres used in this study. Higher education, coupled with subsidised treatment (especially on drugs), can help stimulate patients to access enough treatment resources, especially in countries such as Nigeria, where most of the medical cost is spent out-of-pocket by the patients.

In addition, the present study showed that diabetes self-care behaviour and diabetes distress significantly predict patient health-related quality of life, and this is consistent with previous studies (31, 32, 33). The results of a path analysis on DQOL have shown that diabetes distress, diabetes health literacy, diabetes burnout, complications of diabetes, social support, and self-care had the greatest impact on DQOL, respectively. Accordingly, diabetes distress and diabetes burnout had a negative and direct effect on the DQOL, meaning that patients with distress and burnout had less DQOL. Diabetes burnout and diabetes distress are a combination of emotions and acts that are related to fatigue, to incuriosity, and are associated with the feeling of despair (34). Also, according to a study (33), self-care behaviours had a positive and direct effect on the DQOL. This result showed that patients with better self-care management had better DQOL. Proper self-care behaviours were associated with good control of blood sugar, reduced complications and improved DQOL. Findings confirmed that self-care behaviours were also identified as the most important predictor of QOL in diabetes (35).

Because diabetes-related distress is one of the most important and effective factors in improving patients' self-care behaviours, healthcare givers must consider it when designing educational and counselling programs geared towards enhancing patients' self-care behaviours and preventing complications of diabetes mellitus.

Conclusion

Most of the participants demonstrate optimal self-care behaviours and a moderate diabetes-related distress level. Quality of life scores across physical, psychological, social, and environmental domains were above average, indicating a generally positive perception of well-being. Also, the study shows that although improved diabetes self-care positively influences HRQoL, diabetes-related distress has a stronger negative impact. Therefore, interventions to enhance quality of life in individuals with type 2 diabetes should both encourage optimal self-care and prioritise reducing diabetes-related distress.

List of Abbreviations

BUHREC: Babcock University Health Research Ethics Committee
BUTH: Babcock University Teaching Hospital
DDS-17: Diabetes Distress Scale-17
DM: Diabetes Mellitus
DQOL: Diabetes Quality of Life
DRD: Diabetes-Related Distress
DSMQ: Diabetes Self-Management Questionnaire
HRQoL: Health-Related Quality of Life

OOUTH: Olabisi Onabanjo University Teaching Hospital
OOUTH-REC: Olabisi Onabanjo University Teaching Hospital Health Research
QOL: Quality of Life
T2DM: Type 2 Diabetes Mellitus
WHOQoL-BREF: World Health Organisation Quality of Life- BREF

Declarations

Ethical Considerations and consent to participate

Ethical approval for the study was obtained from the Babcock University Health Research Ethics Committee (BUHREC) (Approval No. BUHREC66722, dated July 25, 2022) and the Olabisi Onabanjo University Teaching Hospital Health Research and Ethics Committee (OOUTH/HREC) (Approval No. OOUTH/HREC/557/2022AP, dated December 28, 2022). Informed consent was obtained from each of the participants, and confidentiality was assured.

Consent for Publication

All the authors gave consent for the publication of the work.

Availability of Data

Data for this work is available from the authors and may be provided upon reasonable request.

Conflict of Interests

The authors have no conflict of interest to declare.

Funding

The authors declared that this study had received no financial support.

Author Contributions

ACCC, OF: Study conception and design
ACCC, AET, LTA: Data collection
ACCC, OF, AC: Data analysis and interpretation
ACCC, OF, AC, AAQ: Drafting of the article
OF, ACCC: Critical revision of the article

Acknowledgments

The authors would like to thank all of the patients with type 2 diabetes mellitus who participated in this study.

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