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Research Article

Evaluation of the Quality of Life of Diabetics at the National Reference University Hospital Center (CHU-RN) of N'Djamena

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Abstract

Diabetes mellitus, a chronic disease, significantly impairs quality of life. In Chad, data on this subject are scarce. This study evaluates the quality of life of diabetic patients followed at the National Reference University Hospital of N'Djamena, using the ADDQOL questionnaire. To assess the QoL of diabetics and identify the factors that can influence it. A cross-sectional and analytical study was conducted with 130 diabetic patients (types 1 and 2) during consultations. The ADDQOL questionnaire was used to assess the impact of diabetes on several aspects of life. A weighted score (impact × importance) was calculated and analyzed. In total, we collected data on 130 diabetic patients. The mean age of the patients was 40.93 ± 12.3 years, with a range from 36 to 65 years. Males were predominant, with a male-to-female ratio of 1.2. The overall weighted score was -2.56, indicating moderate to severe impairment. The most affected areas were: dietary freedom (-4.57), drinking (-4.18), finances (-3.67), work (-3.63), and sexuality (-3.13). Other aspects, such as physical appearance and self-confidence, were also affected. Unlike other variables significantly associated with impaired quality of life—low socioeconomic status, diabetes duration ≥ 5 years, insulin therapy, oral antidiabetic drug use, diabetic foot, hypoglycemia, acidosis, and type 1 diabetes—type 2 diabetes did not show a statistically significant association in our analysis (OR = 2.13; 95% CI: 0.76–5.93; p = 0.138). Diabetes affects various aspects of life, including independence, social life, and intimate relationships. These findings highlight the need to integrate quality of life assessment into patient care, along with appropriate psychological, nutritional, and social support.

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Diabetes Mellitus, Quality of Life, National University Hospital of Reference (CHU-RN) of N'Djamena

1. Introduction

Diabetes is a serious chronic disease defined by hyperglycemia secondary to insulin deficiency [1]. It is a major health problem. It is one of the four priority non-communicable diseases targeted by a global action plan, the most recent of which is the Global Diabetes Pact [2]. It affects people aged 55 and over in urban areas, and its hospital incidence was 4% in 2020 [3].

In 1994, the WHO defined quality of life as "an individual's perception of his or her position in life in the context of the culture and value system in which he or she lives and in relation to his or her goals, expectations, standards and concerns" [4].

Considered a major cause of complications (stroke, renal failure, blindness, diabetic foot, and limb amputation.), diabetes mellitus is constantly increasing, significantly impacting patients' lives. In this study, we aimed to assess the quality of life (QoL) of diabetics in Chad using the Audit of Diabetes Dependent Quality of Life (ADDQOL) scale and to identify factors associated with impaired QoL.

2. Materials and Methods

2.1. Type and Duration of Study

This was a cross-sectional and analytical study that lasted 8 months, from September 2024 to April 2025.

2.2. Place of Study

The study was conducted in the Endocrinology-Diabetology department of the National Reference University Hospital Center (CHU-RN) of N'Djamena.

2.3. Sample Size

We conducted an exhaustive type of sampling. Patients were selected based on the inclusion criteria of the 'AUDIT OF DIABETE DEPENDENT QUALITY OF LIFE' scale. The ADDQOL explores several areas of life (professional life, leisure, personal relationships, diet, social life, etc.). The criteria allowed us to select 130 patients.

2.4. Study Population

The study population consisted of patients with diabetes.

2.4.1. Inclusion Criteria

The following elements were included in this study:

All diabetic patients received in outpatient consultation in the Endocrinology-Diabetology department of the CHU-RN during the study period and consenting to participate in the study.

2.4.2. Exclusion Criteria

1) Diabetic patients received in outpatient consultation in the Endocrinology-Diabetology department of the CHU-RN during the study period but not consenting to the study.
2) Pregnant or breastfeeding women with diabetes.
3) Patients with an associated disabling chronic disease.
4) Patients with a cognitive disorder.
5) Severe diabetes-related complications, such as hypoglycemia, impaired consciousness, severe headaches.

2.5. Data Collection

Data collection was carried out using a pre-established technical form containing specific elements:

1) Sociodemographic variables: Age, sex, region of origin, occupation, place of residence, socioeconomic status, education level.
2) Clinical variables: Family history of diabetes, Duration of diabetes.
3) Paraclinical variables: Fasting venous blood glucose, glycated hemoglobin.
4) Therapeutic variables: Dietary hygiene, medications used, sports…
5) Evolving variables: Duration of treatment, relapse, possible complications, recovery, death.

The instrument used to assess the patients' QoL was the Audit of Diabetes Dependent Quality of Life (ADDQOL) scale.

2.6. Data Analysis

We used Word 2016 for data entry and Sphinx V5 and Excel 2013 for analysis. Descriptive statistics were used to describe the characteristics of the study population. Quantitative variables are expressed as extreme medians.

Operational definitions of concepts

The Audit of Diabetes Dependent Quality of Life (ADDQOL) scale: explores several life domains (work life, leisure, personal relationships, diet, social life, etc.).

There are two types of scores for each domain:

1) Impact score: The patient assesses the impact of diabetes on this aspect of their life (e.g., from -3 = very negative impact to +1 = positive impact).
2) Importance score: The patient judges how important this area is to them (from 0 = not important to 3 = very important).

The product of the impact score and the importance score equals the weighted score.

The impact score is multiplied by the importance score for each area.

Example: Impact -2 × Importance 3 = Weighted Score -6

Overall score (composite score): Average of all weighted scores, it generally ranges from -9 to +3. A score close to -9 indicates poor quality of life related to diabetes, close to 0 indicates a neutral impact, and positive (rare).

QoL was considered impaired if the weighted composite score was less than or equal to the theoretical median (i.e., -3).

Each patient completed the QoL questionnaire independently. For patients with low levels of education, the questionnaire was read by a healthcare professional in a neutral and non-suggestive manner.

The concept of quality of life (QoL): This refers to an individual's perception of their position in life, within a cultural context and in relation to their goals, expectations, standards, and concerns. According to the WHO, quality of life encompasses several areas, including physical health, psychological state, level of independence, social relationships, personal beliefs, and relationship with the environment. In the medical field, the term health-related quality of life (HRQoL) is often used, which refers to the impact of health conditions on a person's ability to live a full and satisfying life.

The ADDQOL has been scientifically validated and is recognized as a valid tool for measuring the perceived impact of the disease on the quality of life of diabetic patients. Its reliability has been confirmed by several studies, showing that it is a reliable tool for assessing the quality of life of diabetic patients.

3. Results

In total, we collected data on 130 diabetic patients. The most represented age group was 36 to 65 years (76 cases, or 58.5%). The mean age was 40.93 ± 12.3 years, with a range from 36 to 65 years. Males were predominant (55%), with a male-to-female ratio of 1.2. 68.4% of our respondents had a middle socioeconomic status. Type 2 diabetes was observed in 89.2% of cases, compared to 10% with type 1 diabetes. 30% of patients had had diabetes for more than 5 years. 43.1% had an HbA1c level between 8 and 10%. 36.9% had diabetic foot; 28.5% of patients experienced hypoglycemia, and 24.6% had other conditions. % with complications such as ketoacidosis. 68.5% of patients were on oral antidiabetic drugs (OADs), while 31.5% were% were on insulin (Table 1).

Analysis of data from the ADDQOL tool shows that the quality of life of diabetic patients was generally impaired, with a mean weighted composite score of -2.56 ± 0.90, indicating an overall negative impact of diabetes on various aspects of daily life. The most affected areas were dietary freedom (-4.57 ± 1.11), freedom to drink (-4.18 ± 1.47), financial situation (-3.67 ± 1.05), professional life (-3.63 ± 1.04), and sexual life (-3.13 ± 1.10), reflecting a significant constraint imposed by diabetes management on these aspects. Some areas such as romantic relationships (-0.69 ± 0.57), social life (-0.76 ± 0.56) or holidays (-0.96 ± 0.58) seem less impacted, with less negative scores. (Table 2).

Unlike other variables significantly associated with impaired quality of life, type 2 diabetes did not show a statistically significant link in our analysis (OR = 2.13; 95% CI: 0.76–5.93; p = 0.138). (Table 3).

Table 1. *General characteristics of the study population.*

Settings	Results
Average age (years)	40.93 +/- 12.3
Sex ratio	1.2
Average socio-economic level (%)	68.4
Type 2 Diabetes (%)	89.2
Duration of diabetes < 1 year (%)	44.6
Average HbA1c between 8-10% (%)	43.1
Diabetic foot (%)	36.9
Hypoglycemia (%)	28.5
Ketoacidosis (%)	24.6
Teen intake (%)	68.5

Settings	Results
Insulin (%)	31.5

Table 2. Characteristics according to the average score of the different life domains.

Items	Impact (min: -3; max: 1)	Importance (min: 0; max: 3)	Impact score (min-9; max: +3)
Hobbies	-1.44 (±0.9)	1.8 (±0.6)	-2.59 (±1.07)
Professional life	-1.25 (±0.3)	2.9 (±0.3)	-3.63 (±1.04)
Shift	-0.70 (±0.1)	1.8 (±0.6)	-1.26 (±0.74)
Vacation	-0.80 (±0.3)	1.2 (±0.6)	-0.96 (±0.58)
Physical fitness	-1.00 (±0.7)	1.4 (±0.4)	-1.40 (±0.89)
Family life	-1.13 (±0.5)	2.6 (±0.9)	-2.93 (±1.04)
Social life	-0.40 (±0.3)	1.9 (±0.7)	-0.76 (±0.56)
Romantic relationship	-0.30 (±0.1)	2.3 (±0.7)	-0.69 (±0.57)
Sex life	-1.49 (±0.9)	2.1 (±0.4)	-3.13 (±1.10)
Physical appearance	-1.54 (±0.4)	1.4 (±0.5)	-2.16 (±0.91)
Self-confidence	-1.42 (±0.8)	1.9 (±0.4)	-2.70 (±1.02)
Motivation	-1.54 (±0.3)	1.2 (±0.5)	-1.85 (±0.79)
Reaction from others	-0.30 (±0.8)	1.8 (±0.6)	-0.54 (±0.70)
Future	-1.61 (±0.1)	1.3 (±0.5)	-2.09 (±0.60)
Living conditions	-0.13 (±0.9)	2.7 (±0.5)	-0.35 (±0.74)
Dependence on others	-1.74 (±0.5)	1.5 (±0.2)	-2.61 (±0.91)
Finance	-1.67 (±0.9)	2.2 (±0.4)	-3.67 (±1.05)
Food freedom	-2.64 (±0.6)	1.73 (±0.7)	-4.57 (±1.11)
Freedom to drink	-2.32 (±1.0)	1.8 (±0.7)	-4.18 (±1.47)
Weighted Composite Score	-	-	-2.56 (±0.90)

Table 3. Characteristics according to factors associated with the QoL of diabetics.

Settings	impaired QoL (weighted composite score ≤ -3) N=112	QDV Good (weighted composite score > -3) N=18	GOLD	IC	P
Age ≥ 36 years	60	18	Indefinite	Indefinite	<0.001
Male sex	65	6	2.8	1.57-4.98	0.0003
average socioeconomic level	80	9	2.44	1.36-4.38	0.002
Duration of diabetes ≥ 5 years	30	12	5.24	2.86-9.61	<0.001
insulin (%)	25	16	28.68	13.08-62.89	<0.001
TEEN	72	17	8.81	3.51-22.13	<0.001
diabetic foot	45	3	3.25	1.68-6.28	0.0003
Hypoglycemia	36	1	7.37	2.92-18.61	<0.001

Settings	impaired QoL (weighted composite score ≤ -3) N=112	QDV Good (weighted composite score > -3) N=18	GOLD	IC	P
Ketoacidosis	31	1	7.38	2.71-20.07	<0.001
Type I Diabetes	14	0	Indefinite	Indefinite	0.0001
Type II Diabetes	99	17	2.13	0.76-5.93	0.138

4. Discussion

Data on quality of life (QoL) in diabetic patients contribute to understanding the management and/or progression of the disease. Hospital data will help regions, countries, and relevant stakeholders develop diabetes management strategies at the national, regional, and international levels to improve the QoL of people with diabetes.

We conducted an eight-month study assessing the quality of life of diabetic patients at the N'Djamena National Referral University Hospital. Of the 1,727 patients seen in the diabetology department during the study period, 933 had a known diagnosis of diabetes, and 130 were eligible and consented to participate. We used the Audit of Diabetes-Dependent Quality of Life (ADDQOL), the most appropriate scale for measuring the quality of life of diabetic patients.

The overall mean age in our study was 40.93 ± 12.3 years, with a range from 36 to 65 years. This result is comparable to that obtained by Yao et *al.* in Côte d'Ivoire in 2019 [5], who found a mean age of 57 years. However, our result is lower than that of Kim et *al* in South Korea in 2020 [6], which found an average age of 60.17 years.

Males were the most represented sex (55% of cases), with an overall male-to-female ratio of 1.2. This result is comparable to that obtained by Chatelet in France in 2019 (65.5% of cases) [7]; Hossini et *al.* in Morocco in 2020 [8] also observed a clear male predominance (63.3%). However, this result differs from that of Tiadé et *al., who* in Côte d'Ivoire in 2023 [9] found a female predominance of 53.2%.

This male predominance could reflect a female underrepresentation in medical consultations, possibly linked to economic barriers.

Regarding the At the socioeconomic level, 68.4% of patients had an average standard of living. This result is similar to that obtained by Haoues et *al* in Tunisia in 2023 [10], observed an average socioeconomic level of 65.1% (n=656).

This result suggests that the majority of diabetic patients followed in our study belong to a middle socioeconomic class, which may have direct implications for their quality of life.

In our study, a duration of at less than 1 year, in 44.6% (n=58). This result is higher than that of Arnika et *al.* in Indonesia in 2024 [11], who reported 14.2% of patients who had less than one year since the diagnosis of diabetes.

This could reflect the increasingly early detection of the disease with a clearly increasing prevalence.

The glycated hemoglobin level between 8 and 10% was high in 43.1% (n=58). Our results corroborate those of Ouafae in Morocco in 2011 [12], who found 36% with a rate greater than 7%. This result is lower than those of Moradi et *al.* in Iran in 2021 [13], report 66% of diabetic patients with an average HbA1c of 8.01% ± 1.77%.

During the study period (8 months), 48 patients experienced a complication such as diabetic foot (36.9%). This result is higher than those reported by other authors [14, 15].

This could reflect the delay in diabetes care in our region, due to access to care, patient education, or other socio-economic factors.

From a treatment perspective, 68.5% of patients were receiving oral treatment. This result corroborates those of Hassan et *al.,* in Lebanon in 2024 [16] and Almeida et *al.* in Portugal in 2020 [17], respectively obtained 73.8% and 70.36%, who were taking oral medication.

General refusal of diabetics to use insulin; 30% of patients reported a good quality of life. This result is lower than that of Ovayolu in Nigeria in 2015 [18]. and Sarfo in Ethiopia in 2023 [19], respectively reported 64% and 50.3 ± 18.1% of diabetic patients who had a good quality of life.

This could be explained in our population by the socio-economic level.

In our 2025 study of 130 diabetic patients in Chad, the mean weighted quality of life score, measured using the ADDQOL scale, was -2.56 ± 0.90. This score reflects a significant impairment in diabetes-related quality of life in our population. In comparison, several international studies have reported slightly less negative scores (Table 4).

The characteristics of our diabetic population, which may face poor glycemic control, complications (neuropathies, retinopathies, etc.), or irregular medical follow-up, directly influence quality of life. Furthermore, the socioeconomic context, marked by limited access to care, blood glucose self-monitoring equipment, and appropriate treatments, constitutes an aggravating factor. Finally, psychosocial factors such as a lack of psychosocial support likely play a central role in the deterioration of the quality of life of diabetic patients.

Table 4. Main studies assessing the quality of life of diabetic patients using the ADDQOL scale.

Study	Country	Year	Study population	Weighted Score
Our study	Chad	2025	130 patients	-2.56 ± 0.90
Jannoo et al. (2015) [20]	Malaysia	2015	411 patients	-1.9 ± 1.2
Turk et al. (2014) [21]	Slovenia	2014	261 patients	-1.6 ± 1.4

5. Conclusion

This study, conducted at the University Hospital of N'Djamena, highlighted the significant impact of diabetes on patients' quality of life. It clearly demonstrated that several essential dimensions of daily life, such as dietary freedom, sexual life, finances, professional life, and autonomy, are severely impaired in diabetic patients. The overall weighted average score of -2.56 reflects a moderate to severe impairment of quality of life, emphasizing the urgency of a holistic approach in care management. These results reveal the current insufficiency of strategies focused solely on glycemic control and call for a reevaluation of the diabetes care model in Chad.

Abbreviations

CHU-RN	National Reference University Hospital Center
ADDQOL	Diabetes Dependent Quality of Life
QoL	Quality of Life
WHO	World Health Organization
HRQoL	Health-Related Quality of Life

Author Contributions

Daboulaye Allah-Sayim Desire: Conceptualization, Resources

Oumar Abba: Conceptualization, Resources

Nafissatou Ali Ouani Makang: Data curation, Methodology

Tidjani Abdelsalam: Data curation, Methodology

Habiba Abdoulaye Affadine: Methodology

Adjougoulta Koboy Bonte: Data curation

Mouandilmadji Djikoldinguem Marschall: Resources

Zakaria Abdel-Madjid Zakaria: Conceptualization, Resources

Ali Mahamat Moussa: Resources

Bessimbaye Nadlaou: Resources

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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