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Journal of Public Health Studies
ISSN 2958 - 4183 (Online)
Vol.4, Issue 2, pp 1 – 27, 2025

Mental Health Status, Quality of Life, and Associated Factors Among Type 2 Diabetic Patients in the Buea Regional Hospital, Cameroon

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Article's History

Submitted: *12th September 2025*
Revised: *1st October 2025*
Published: *5th October 2025*

Abstract

Aim: The rising burden of diabetes in developing countries is a cause for concern. It is projected that there will be more than 590 million Type 2 diabetic (T2D) patients by 2035. Diabetes mellitus may affect the mental health and quality of life of the affected population. In Cameroon, there is little data on the mental health status and quality of life of people living with diabetes. This study assessed the mental health status (depression and anxiety) and the quality of life of people living with type 2 diabetes seeking treatment in the Buea Regional Hospital, Cameroon.

Methods: The study was a hospital-based cross-sectional study involving type 2 diabetic patients seeking treatment in the Buea Regional Hospital. The study involved 230 participants recruited consecutively from the diabetic unit. Quantitative data on depression, anxiety and quality of life (QoL) were collected from 230 T2D patients using standard questionnaires (PHQ9, GAD-7 and WHOQoL-BREF) from March 2025 to April 2025. The data was analyzed using SPSS version 27 to determine the prevalence of depression, anxiety and the quality of life. Binary and Linear regression analyses aided to determine the factors associated with anxiety, depression and QoL.

Results: The prevalence of anxiety and depression was 19.6% and 30.0% respectively**.** Anxiety and depression were both associated with the level of income and the duration of the diseases. Those with comorbidity (AOR= 2.26) were more likely to be depressed, whereas those who did physical exercises were less likely to be depressed (AOR= 0.41). The quality of life was poor in the physical (34,8%), psychological (33.0%), social (34.3%) and environmental (22.2%) domains. For the physical and social domains, poor QoL was associated with an increase in age. The physical, social and environmental QoL were negatively affected with the duration of the disease. Participants with comorbidity had a better physical, environmental and social QoL.

Conclusion: These findings provide context-specific evidence to guide interventions aimed at improving the psychosocial well-being of type 2 diabetic patients in Cameroon.

Recommendation: This study recommend screening diabetic patients for mental health related issues and to incorporate mental health counselling in their hospital care.

Keywords: *Anxiety, Buea Regional Hospital, depression, diabetes type 2, quality of life*

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Journal of Public Health Studies
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BACKGROUND

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia. It may be due to impaired insulin secretion, resistance to peripheral actions of insulin, or both [1]. The global prevalence of diabetes in adults has been increasing over recent decades [2]. The incidence of Type 2 diabetes (T2D) continues to increase, and it is projected that there will be more than 590 million patients diagnosed with this condition by 2035. In the sub-Saharan Africa (SSA), an estimated 14.2 (9.5–29.4) million people aged 20–79 have diabetes, representing a regional prevalence of 2.1–6.7%. SSA has the highest proportion of undiagnosed cases of diabetes; over two-thirds (66.7 %) of people with diabetes are unaware of their status [4]. According to the International Diabetes Federation, 620,800 adults in Cameroon were living with diabetes in 2021, giving a prevalence of 4.8% which is on a continuous rise, placing diabetes as an important cause of ill health and a risk factor for other chronic diseases in Cameroon [5].

Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community [6]. The World Health Organization considers that depression is one of the leading causes of health deterioration and progression towards disability. This condition has been associated with a higher risk of diabetes complications and increased healthcare services utilization among patients with T2D [6]. The association between T2D and poor mental health has been well documented. A large body of evidence has highlighted that both anxiety and depression are more common in people with diabetes than in the general population [7]. Furthermore, it has been consistently shown that depression is associated with an increased risk of morbidity and mortality in people with diabetes [7]. Beyond its metabolic complications, T2D has profound psychosocial implications. Mental health disorders such as depression and anxiety are increasingly recognized as both consequences of and contributors to poor diabetes outcomes [6].

Quality of life (QoL) refers to a person's individual perception of physical, emotional, and social status. Diabetes mellitus has a major effect on patient quality of life (QoL) [8]. Type 2 diabetes patients have great pressure to treat themselves, and have lower QoL than healthy individuals. Clinical measures can provide a good estimate of disease control, but the ultimate aim of diabetes care is to prevent the patient's QoL from getting worse [8]. Quality of life is an important aspect in diabetes because poor quality of life may lead to diminished self-care, which in turn may lead to worsened glycemic control, increased risks for complications and exacerbation of disease. Thus, it is apparent that quality of life issues are imperative and can be used to predict how well an individual would be able to handle their disease and maintain his long-term health and well-being [9]. The evaluation of QoL is considered an important outcome measure for the management of chronic diseases [4]. Several studies conducted on QoL in T2DM in developed and developing countries have shown that poor QoL leads to worsening glycemic control, increased hospital visits, poor sleep, and restricted social life. A study conducted in 2024 in Saudi Arabia reported a significant correlation between depression, anxiety, and stress with QoL [10].

In our setting, data on quality of life and mental status in the T2D patients are scarce. Despite the global recognition of the link between T2D, mental health, and QoL, little is known about how these factors interact in Cameroon. Understanding this relationship is critical for tailoring holistic diabetes care interventions that address both physical and psychosocial needs. This study aimed to assess

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Journal of Public Health Studies
ISSN 2958 - 4183 (Online)
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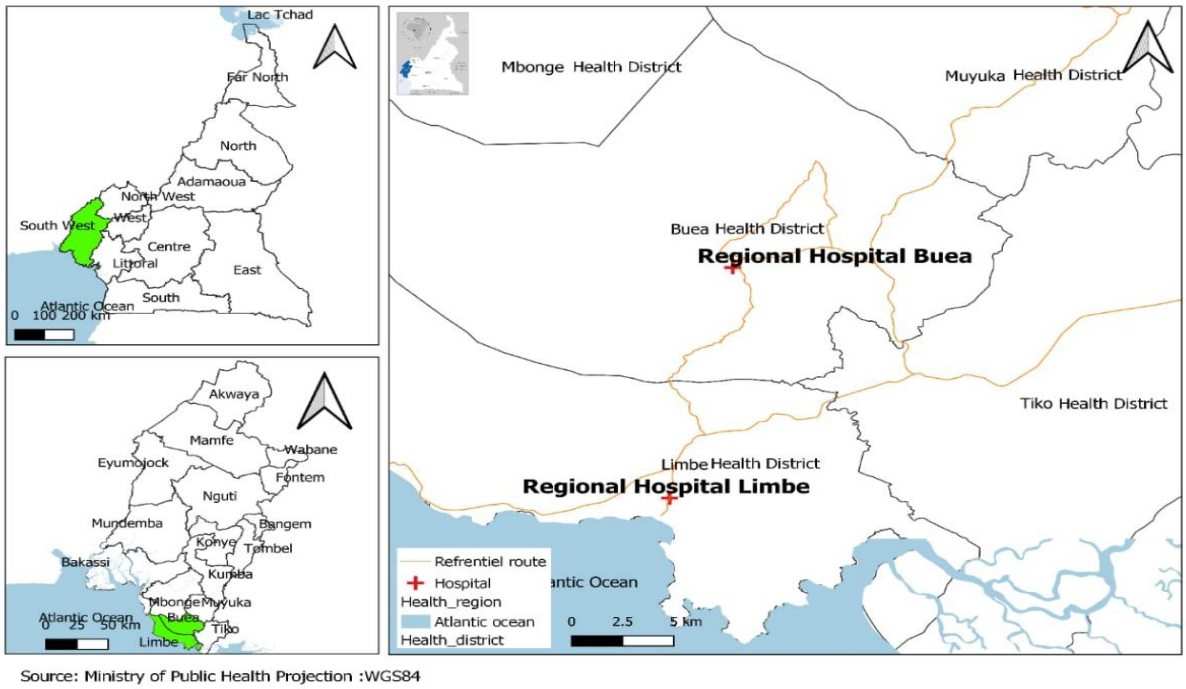
the mental health status and quality of life of patients living with T2D seeking treatment in the Buea Regional Hospital, Cameroon.

MATERIALS AND METHODS

Study Area

The study was conducted at the Buea Regional Hospital, which operates a diabetic clinic serving approximately 700 registered patients, of whom 691 are regular attendees. Clinic days are held twice weekly, with services including therapeutic management, education, and routine monitoring. However, the clinic remains open throughout the week except on weekend days for missed appointments and or emergencies, as well as newly diagnosed patients. The services of the clinic are free and patients only pay for their medication and other needs through the hospital payment system. On official clinic days, health educational talks are given before any services and follow-up. Other activities offered include blood glucose and blood pressure checks (Figure 1).



Source: Ministry of Public Health Projection :WGS84

Figure 1: Map Locating Buea Regional Hospital in the Fako division

Study Design and Population

The study was a cross-sectional hospital-based study involving type 2 diabetic patients receiving treatment at the Buea Regional Hospital. The study entailed quantitative data collection using a questionnaire administered to diabetic patients to collect data on depression, anxiety and their quality of life. Data was collected between March 2025 to April 2025 via an interview-administered questionnaire. The study involved 230 participants recruited consecutively from the diabetic unit. Eligible participants were adults aged ≥18 years with a confirmed diagnosis of T2D and at least 6 months of follow-up at the diabetic clinic. Patients with severe cognitive impairment or critical illness were excluded.

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Data Collection Tools

Depression was assessed using the patient health Questionnaire (PHQ-9). Responses to the 9-item questionnaire were recorded on a four-point Likert scale that ranged from 0 ("Never") to 3 ("Almost every day") [11]. Anxiety was assessed using the generalized anxiety disorder questionnaire (GAD-7) [12]. The GAD-7 scale consists of seven items that are answered on a four-point Likert scale ranging from 0 ("Never") to 3 ("Almost every day"). The Quality of life of type 2 diabetic patients was assessed using World Health Organization Quality-of-Life Scale (WHOQOL-BREF) [13]. The WHOQOL-BREF enables participants to rate their overall QoL and health satisfaction using 26 items grouped into four domains: Physical health (seven items): assessing the presence of pain and discomfort, dependence on medical treatment; energy and fatigue; mobility, sleep and rest; activity of daily living; perceived working capacity; Psychological health (eight items): assessing affect, cognitive functions, body image, and appearance; self-esteem, negative effects, and spirituality; Social relationship (three items): assessing personal relationship, social support, and sexual activity and the environmental domain (eight items) assessing the physical environment. Two questions in the scale assessed the overall general health (two items). The response options range from 1 (very dissatisfied / very poor) to 5 (very satisfied / very good) with assessments made over the preceding 2 weeks. The total raw score for these five dimensions was transformed into 0 (lowest) to 100 (highest) and then an analysis of transformed scores was done, with low score indicating poor QoL [13,14].

Statistical Analysis

The data collected was checked for proper filling of the questionnaire and entered in Kobo Collect, cleaned and analysed using the Statistical Package for Social Sciences (SPSS) version 27. Frequencies, proportions, percentages, mean and standard deviation were used for descriptive analysis. Multivariate logistic regression analyses was used to identify factors independently associated with depression and anxiety, whereas a multiple linear regression analysis was used to identify factors associated with each domain of the quality of life. P-value < 0.05 was considered statistically significant.

For depression, the overall scores were calculated and categorized into five groups according to the severity: minimum (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27). Individuals scoring within the moderate to severe range (scores ≥ 10) were classified as suffering from depression. For anxiety, overall scores were calculated, and patients were classified into four categories: low (0–4), mild (5–9), moderate (10–14) and severe (15–21). Individuals with scores equal to and greater than 10 (moderate to severe) were classified as suffering from anxiety [12]. For the quality of life, scores of each domain were transformed into a scale of 100 and the QoL of patients was classified into Low (< 45%), moderate (45-65) and High (>65).

Ethical Consideration

Ethical clearance was obtained from the Institutional Review Board of the Faculty of Health Sciences, University of Buea and from the Regional Delegation of Public Health, South West Region. Administrative authorizations were obtained from the Regional Delegation of Public Health South West Region and the Buea Regional Hospital. All the respondents signed a consent form before being enrolled in the study. Participation was voluntary, and respondents were assured of

Journal of Public Health Studies
ISSN 2958 - 4183 (Online)
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confidentiality through anonymized questionnaires. Data were stored securely with access limited to the research team.

RESULTS

Sociodemographic Characteristics of Participants

A total of 230 participants were recruited into the study from the Buea Regional Hospital. More than half were female, 164(71.3%). The age of participants ranged from 21 to 94 years, with a mean age of 56.8 years and a standard deviation of 12.37 years. The age group 40-60 was the most represented 125(54.3), and those with <40 years were the least represented. For the educational level, most of the participants, 66(28.7%) had reached the university level, and 22(9.6%) had no formal education. One third of the participants, 83(36.1%) had a monthly income level of <50000frs and 5(2.2%) had an income level >300000frs. For the employment status, a larger fraction of participants 82(35.7%), were self-employed. As concerns marital status,148(64.3%) were married while 32(13.9%) were single. The majority, 180(78.3%), indicated living in a household size of 4-6 persons. For the payment of the hospital bills, 153(66.5%) participants paid themselves, whereas 102(44.3%) were paid by their children (Table 1).

Table 1: Demographic Characteristics of the Type 2 Diabetic Patients in the Buea Regional Hospital

Variable	Category	Frequency	Percentage
Sex	Female	164	71.3
	Male	66	28.7
	Total	230	100
Age group in years	< 40	24	10.4
	40 - 60	125	54.3
	> 60	81	35.2
	Total	230	100
Level of education	No formal education	22	9.6
	Primary school	46	20
	Secondary school	47	20.4
	High school	49	21.3
	University	66	28.7
	Total	230	100
Employment status	Employed in the private sector	14	6.1
	Employed by the Government	38	16.5
	Retired	46	20
	Self employed	82	35.7
	Unemployed	50	21.7
	Total	230	100

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Income in CFA	≤ 50,000	83	36.1
	51,000 -100,000	71	30.9
	101,000 -200,000	56	24.3
	201,000-300,000	15	6.5
	>300,000	5	2.2
	Total	230	100
Marital status	Divorce	8	3.5
	Living with a partner	14	6.1
	Married	148	64.3
	Single	32	13.9
	Widow/widower	28	12.2
	Total	230	100
Household size	0_3	39	17
	4_6	180	78.3
	>10	11	4.8
	Total	230	100
Responsible for bills	Your children	102	44.3
	Yourself	153	66.5
	Friends	27	11.7
	Insurance	3	1.3
	Others	20	8.7
	Total	305	132.6

****Participants could select more than one source of bill payment, hence totals exceed 100%.*

Clinical and Lifestyle Characteristics of the Study Participants

In profiling the disease characteristics and life style, 125(54.3%) participants had diabetes for over 1-5 years, whereas 74(32.2%) had the disease between 6-10years and 31(13.5%) had diabetes for more than 10 years. More than half of the study participants, 154(67.0%) had comorbidities. The study also revealed that 136(59.1%) of the participants did not consume alcohol and most of them, 162(70.4%), did not do physical exercise (Table 2).

Table 2: Clinical and Lifestyle Characteristics of Type 2 Diabetic Patients in the Buea Regional Hospital

Variable	Category	Frequency	Percent
Alcohol consumption	No	136	59.1
	Yes	94	40.9
Smoking of cigarette	No	211	91.7
	Yes	19	8.3

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Does physical exercise	No	162	70.4
	Yes	68	29.6
Suffering from comorbidity	No	76	33
	Yes	154	67
Duration of the disease	1-5	125	54.3
	6-10	74	32.2
	>10	31	13.5

Prevalence of Anxiety Amongst Type 2 Diabetes Patients in the Buea Regional Hospital

Out of 230 participants included in the study, 86(37.4%) had mild anxiety, 99(43.0%) had minimal anxiety, 32(13.9) had moderate anxiety, and 13(5.7%) had severe anxiety (Figure 2). Overall, the prevalence of anxiety was 45(19.6%) (Figure 3).

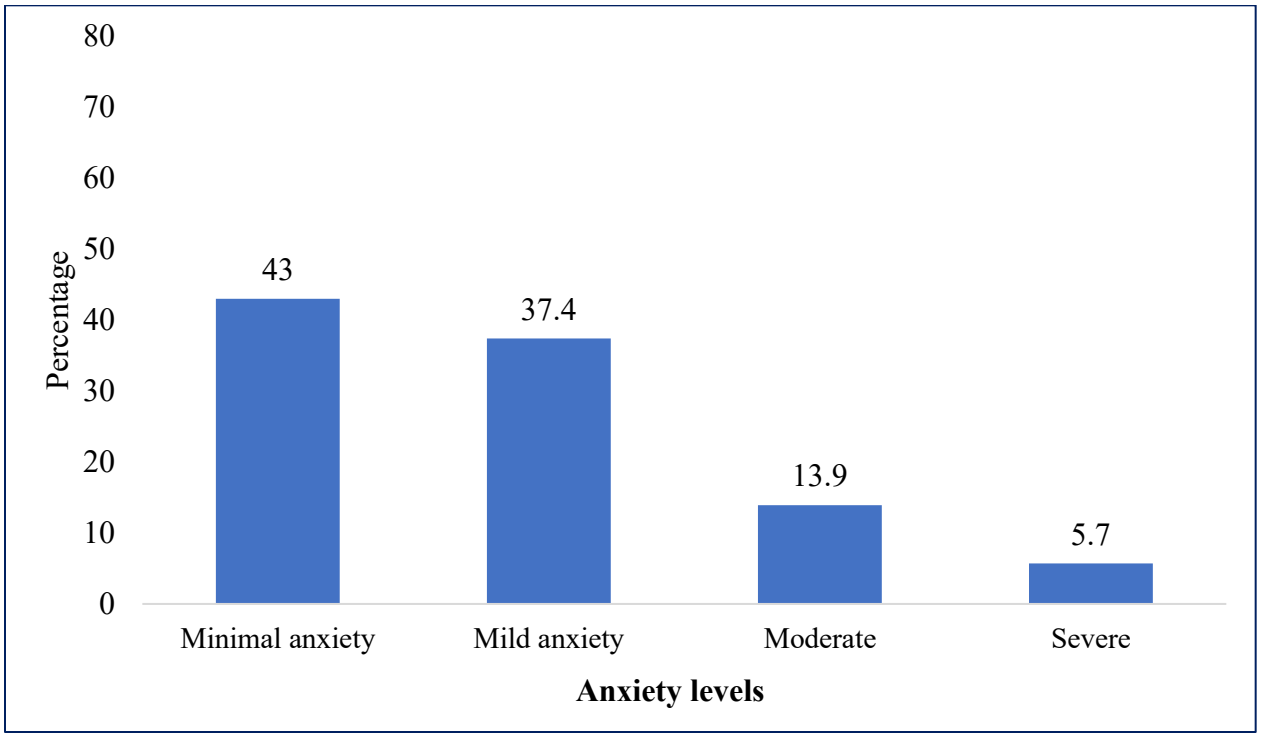

Figure 2: Level of Anxiety Among Study Participants

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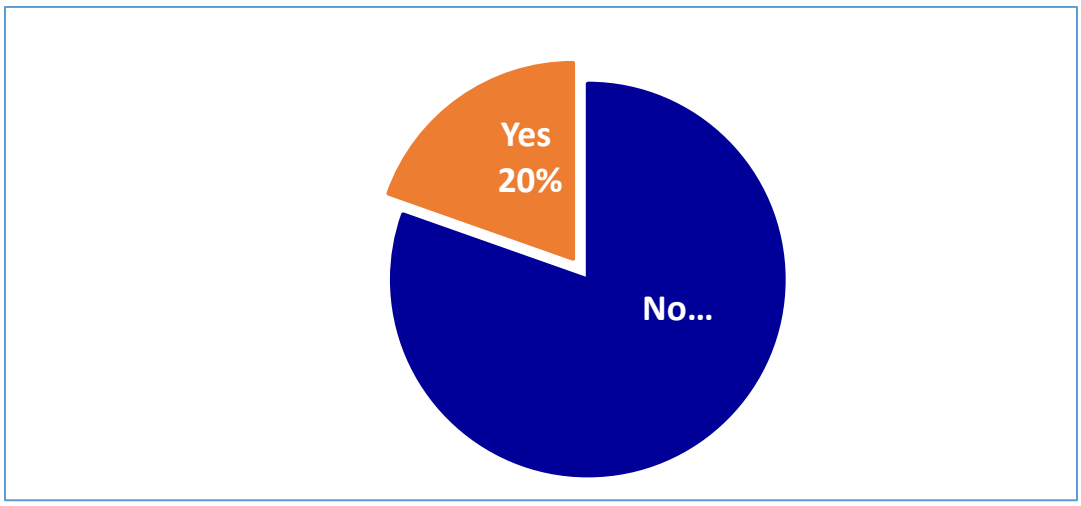

Figure 3: Prevalence of Anxiety amongst Type 2 Diabetic Patients in the Buea Regional Hospital.

Prevalence of Depression amongst Type 2 Diabetes Mellitus Patients in the Buea Regional Hospital

Out of 230 participants included in the study, one third of the participants, 87(37.8%) had mild depression, 61(26.5%) had minimal depression and 42(18.3%) had moderate depression. Severe depression was observed in 9(3.9%) of the study participants (Figure 4). The overall prevalence of depression was 69(30.0%) (Figure 5).

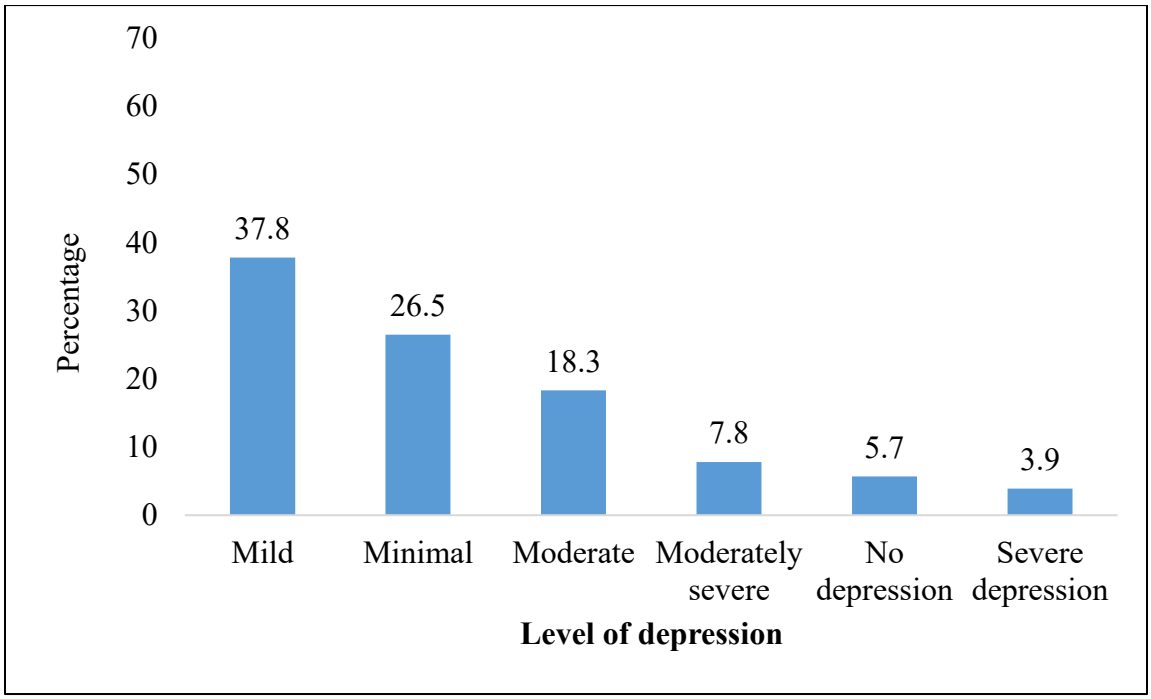

Figure 4: Level of Depression among Participant in the Buea Regional Hospital

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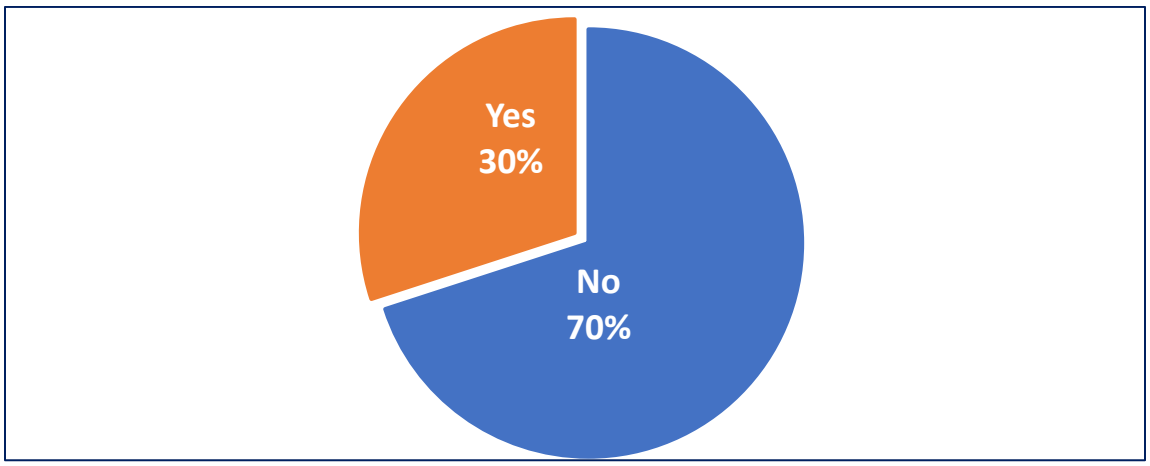

Figure 5: Prevalence of Depression amongst Type 2 Diabetic Patients in the Buea Regional Hospital.

Factors Associated with Anxiety among Type 2 Diabetic Patients at the Buea Regional Hospital

The multivariate logistic regression analysis revealed that educational level, monthly income level, and the duration of the disease were independently associated with anxiety. The odds of the participants with primary school level developing anxiety were 88% less (AOR= 0.22, 95%CI [0.06,0.74], p= 0.015) than those with university education. The odds of participants with an income level below 50000frs being anxious were 9 times higher (AOR= 9.28, 95%CI [1.07-80.37], P= 0.043) compared to those who earned above 200000frs. The odds of participants with the disease duration more than 10 years developing anxiety were 7 times higher (AOR= 6.64, 95%CI [2.34-18.91], p < 0.001) compared to those who had the disease for 1 to 5 years (table 3).

Table 3: Factors Associated with Anxiety among Type 2 Diabetic Patient at the Buea Regional Hospital

Variable	Categories	AOR	95% CI		
			Lower	Upper	P-value
Education level	High school	0.87	0.29	2.61	0.803
	No formal education	0.80	0.22	2.90	0.730
	Primary school	0.22	0.06	0.74	0.015
	Secondary school	0.52	0.17	1.57	0.247
	University	1			
Income level	≤ 50,000	9.28	1.07	80.37	0.043
	101,000 -200,000	1.28	0.12	13.23	0.838
	51,000 -100,000	5.50	0.65	46.81	0.119
	> 200,000	1			

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Physical exercise	Yes	0.43	0.17	1.09	0.076
	No	1			
Duration of the disease	>10	6.64	2.34	18.91	<0.001
	6-10	1.81	0.76	4.30	0.180
	1-5				

Factors Associated with Depression among Type 2 Diabetic Patients at the Buea Regional Hospital

After controlling for confounders**,** monthly income level, physical exercise, duration of the disease and comorbidity were independently associated with depression. The odds of participants with an income level below 50000frs being depressed were 5 times higher (AOR= 4.50, 95%CI [1.13-18.00], P= 0.033) than those who earn above 200000frs. The odds of participants who carry out physical exercise developing depression were 0.41 less (AOR= 0.41, 95%CI [0.19-0.86] than those who do not carry out physical exercise. The odds of participants who had the disease from 6 to 10 years were about 3 times higher (AOR= 2.46, 95%CI [1.35-5.16], p= 0.005) than those who had the disease for 1 to 5 years. Odds of participants with comorbidity developing depression were about 2 times higher (AOR= 2.26, 95%CI [1.12-4.58], p=0.023) than those who had no comorbidity (table 4).

Table 4: Factors Associated with Depression among Type 2 Diabetic Patients at the Buea Regional Hospital

Variable	**Categories**	**AOR**	**95% CI**		**P-value**
			Lower	**Upper**	
Income level	≤ 50,000	4.50	1.13	18.00	0.033
	101,000 -200,000	2.14	0.52	8.82	0.292
	51,000 -100,000	2.77	0.69	11.08	0.149
	> 200,000	1			
Physical exercise	Yes	0.41	0.19	0.86	0.018
	No	1			
Duration of the disease	>10	2.19	0.87	5.51	0.097
	6_10	2.64	1.35	5.16	0.005
	1_5	1			
Comorbidity	Yes	2.26	1.12	4.58	0.023
	No	1			

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The QoL scores for the physical health domain vary from 14.29 to 78.57 with a mean score of 50.03 ±12.65. For the social life domain, the scores vary from 0 -100 with a mean score of 53.88 ± 19.51. For the environmental domain, the scores vary from 15.63 to 90.63 with a mean of 57.13 ±14.63. For the psychological domain, the scores vary from 12.5 -91.67 with a mean of 48.32 ±12.86.

Figure 5 presents the levels of the quality domains of life among the study participants. For the physical domain, most of the participants, 132(57.4%), had moderate physical health activity whereas 80(34.8%) had low physical health activity. For the psychological domain, 135(58.7%) had a moderately quality of life, whereas 76(33.0%) had a low quality of life. In the social domain, 77(33.5%) had a moderate quality of life, 79(34.3%) had a low QoL. With regards to the environmental domain, the QoL was low in 51(22.2%) and moderate in 104(45.2%).

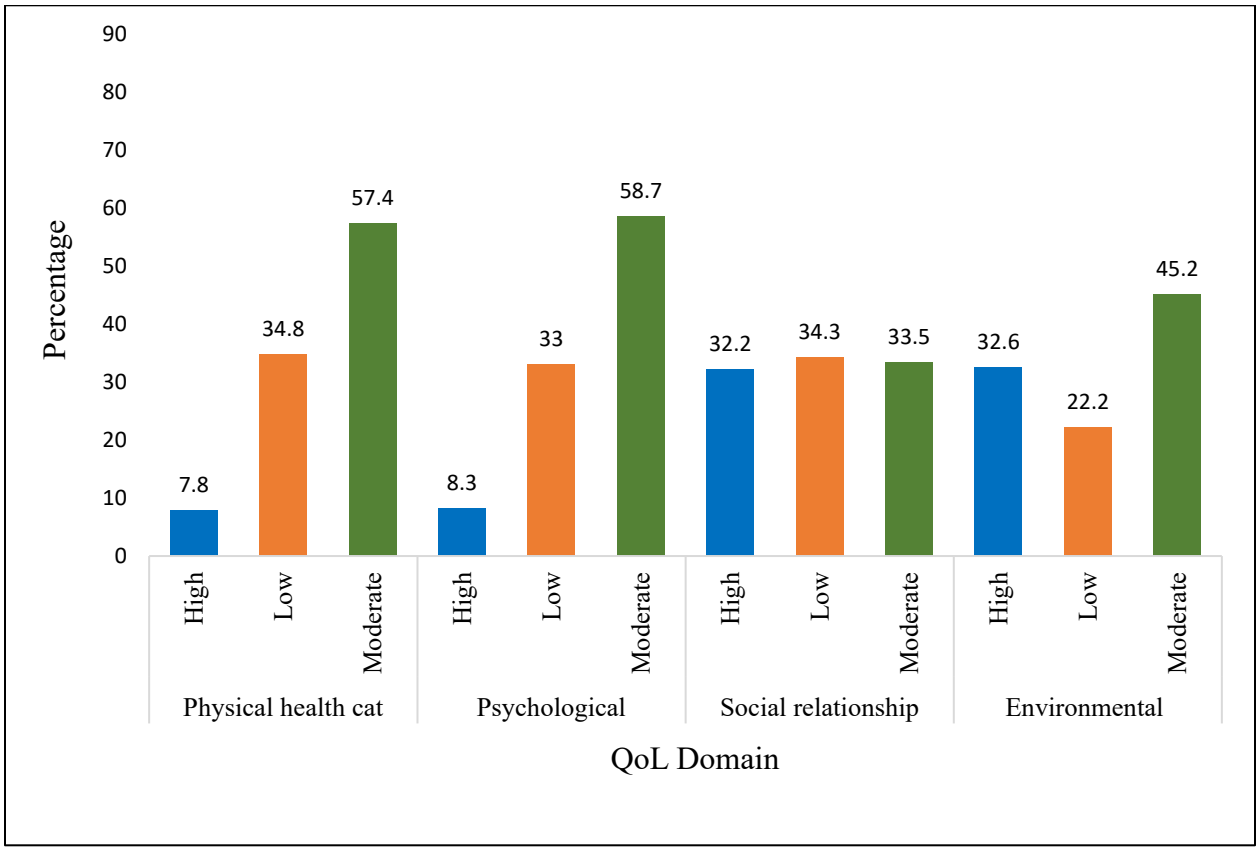

Figure 6: Health-related Quality of Life of Study Participants

Factors Associated with Physical Health in Type 2 Diabetic Patients in the Buea Regional Hospital

For the physical health domain, the QoL was associated with the age group, education level, income level, household size, physical exercise, duration of disease and presence of comorbidity (table 8). Patients above 60 years (t= -3.2, p=0.002) and between 40 to 60 years (t= -3.18, p=0.002)

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had poorer QoL compared to those below 40 years. Those with no formal education had a better physical health (t= 2.01, p= 0.046) compared to those who had reached university level. Those who earned less than 50000frs (t=-2.23, p= 0.027) had poorer physical health compared to those who earned more than 200000frs monthly. People living in households with more than 10 (t=-2.19, p=0.030) had poorer physical health compared to those with 0-3 inhabitants. People who did physical exercise (t=3.30, p=0.001) had a better physical health than those who did not do physical exercise. People with comorbidity (t=2.61, p=0.010) had better physical health compared to those with no comorbidity (Table 6).

Table 6: Factors Associated with Physical Health in Type 2 Diabetic Patients in the Buea Regional Hospital

Variables	Categories	B	Std. Er	t	95% CI		
					Upper	Lower	Sig.
Age group in years	> 60	-9.59	3.00	-3.20	-15.49	-3.68	0.002
	40 - 60	-8.36	2.63	-3.18	-13.54	-3.17	0.002
	< 40	0					
Education levels	High school	-0.26	2.20	-0.12	-4.59	4.07	0.905
	No formal education	6.42	3.19	2.01	0.13	12.71	0.046
	Primary school	2.85	2.49	1.15	-2.05	7.74	0.254
	Secondary school	1.14	2.31	0.49	-3.42	5.70	0.622
	University	0					
Employment status	Employed in the private sector	7.87	3.99	1.97	0.00	15.73	0.050
	Employed by the Government	4.20	3.38	1.24	-2.46	10.86	0.215
	Retired	3.17	2.70	1.18	-2.14	8.49	0.240
	Self employed	4.73	2.40	1.97	-0.01	9.46	0.050
	Unemployed	0					
Income level	≤ 50,000	-8.37	3.76	-2.23	-15.79	-0.96	0.027
	101,000 -200,000	-5.24	3.14	-1.67	-11.42	0.95	0.097
	51,000 -100,000	-5.78	3.52	-1.64	-12.72	1.16	0.102
	> 200,000	0					
Household size	>10	-8.88	4.07	-2.19	-16.89	-0.87	0.030
	4-6	-2.47	2.04	-1.22	-6.49	1.54	0.226
	0-3	0					
Physical exercises	Yes	5.52	1.67	3.30	2.22	8.81	0.001
	No	0					

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Duration of the disease	>10	-5.95	2.64	-2.25	-11.16	-0.74	0.025
	6-10	-3.61	1.82	-1.98	-7.19	-0.02	0.049
	1-5	0					
Presence of comorbidity	Yes	4.40	1.69	2.61	1.08	7.72	0.010
	No	0					

Factors Associated with Social Health in Type 2 Diabetic Patients in the Buea Regional Hospital

For the social domain, the QoL was associated with the income level, duration of the disease and presence of comorbidity. Participants who earned between 51000- 100000frs (t= -2.15, p=0.033) were negatively affected compared to those who earned above 200000frs. People who have been living with the disease for 6 to 10 years (t=-2.06, p= 0.041) were more affected than those who have been living with the disease for 1-5years. Participants with comorbidity (t=3.56, p=0.001) had a better social life compared to those with no comorbidity (Table 7).

Table 7: Factors Associated with Social Health in Type 2 Diabetic Patients in the Buea Regional Hospital

Variables	Categories	B	Std. Error	t	95% CI		Sig.
					Upper	Lower	
Income level	≤ 50,000	-9.44	4.90	-1.93	-19.11	0.22	0.055
	101,000 - 200,000	-7.70	4.91	-1.57	-17.38	1.97	0.118
	51,000 -100,000	-10.40	4.84	-2.15	-19.94	-0.85	0.033
	> 200,000	0					
Physical exercises	Yes	5.38	2.74	1.97	-0.02	10.78	0.051
	No	0					
Duration of the disease	>10	-5.81	3.97	-1.47	-13.62	2.01	0.144
	6-10	-5.74	2.79	-2.06	-11.24	-0.24	0.041
	1-5	0					
Presence of comorbidity	Yes	9.66	2.75	3.52	4.25	15.07	0.001
	No	0					

Factors associated with Environmental Health in Type 2 Diabetic Patients in the Buea Regional Hospital

For the environmental domain, the QoL was associated with educational level, duration of the disease and presence of comorbidity. The environmental QoL was poorer in participants with the primary school level QoL (t=-2.18, p=0.030) compared to those who had a university level of education. Participants who have been living with the disease for 6 to 10 years (t= -2.05, p= 0.041)

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had poorer Environmental QoL compared to those who have been living with the disease between 1 to 5 years. Participants with comorbidity (t= 2.73, p=0.007) had a better environmental quality of life compared to those without comorbidities (Table 8).

Table 8: Factors Associated with Environmental Health in Type 2 Diabetic Patients in the Buea Regional Hospital

Variables	Categories	B	Std. Error	t	95% CI		
					Upper	Lower	Sig.
Education levels	High school	2.34	2.72	0.86	-3.02	7.692	0.391
	No formal education	-4.37	3.88	-1.13	-12.02	3.275	0.261
	Primary school	-6.67	3.06	-2.18	-12.69	-0.645	0.030
	Secondary school	-3.49	2.84	-1.23	-9.08	2.107	0.221
	University	0					
Employment status	Employed in the private sector	1.78	4.56	0.39	-7.21	10.756	0.697
	Employed by the Government	6.33	3.43	1.85	-0.42	13.08	0.066
	Retired	1.42	3.00	0.48	-4.48	7.328	0.636
	Self employed	5.17	2.68	1.93	-0.12	10.456	0.055
	Unemployed	0					
Duration of the disease	>10	-3.30	3.07	-1.08	-9.34	2.744	0.283
	6-10	-4.39	2.14	-2.05	-8.60	-0.176	0.041
	1-5	0					
Presence of comorbidity	Yes	5.37	1.97	2.73	1.49	9.251	0.007
	No	0					

Factors Associated with Psychological Health in Type 2 Diabetic Patients in the Buea Regional Hospital

Psychological QoL was associated with sex, age group, marital status, income level, household size. Females had a better psychological QoL (t=3.08, p= 0.002) compared to males. Participants between 40-60 (t=-3.32, p=0.001) and >60 (t=-3.38, p=0.001) had a poorer psychological QoL compared to those below 40 years. Participants who were single (t=-2.40, p=0.017) and those living with a partner (t=-2.47, p=0.014) were negatively affected psychologically compared to those who were widows(er). Participants who had income level <200000frs were negatively affected compared to those who earned > 200000frs monthly. Participants who had a household size >10 (t=-3.08, p=0.002) were negatively affected compared to those who had a household size of 0-3 (Table 9).

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Table 9: Factors Associated with Psychological Health in Type 2 Diabetic Patients in the Buea Regional Hospital

Variables	Categories	B	Std. Error	t	95% CI		Sig.
					Upper	Lower	
Sex	Female	5.50	1.78	3.08	1.99	9.02	0.002
	Male	0					
Age group	> 60	-10.80	3.20	-3.38	-17.11	-4.49	0.001
	40 - 60	-9.61	2.90	-3.32	-15.32	-3.90	0.001
	< 40	0					
Marital status	Divorce	-9.47	5.06	-1.87	-19.43	0.50	0.062
	Living with a partner	-10.95	4.43	-2.47	-19.67	-2.22	0.014
	Married	-2.80	2.80	-1.00	-8.32	2.72	0.319
	Single	-8.37	3.49	-2.40	-15.25	-1.49	0.017
	Widow/widower	0					
Income level	≤ 50,000	-11.26	3.22	-3.50	-17.60	-4.92	0.001
	101,000 -200,000	-9.47	3.12	-3.04	-15.62	-3.33	0.003
	51,000 -100,000	-9.82	3.10	-3.17	-15.92	-3.72	0.002
	> 200,000	0					
Household size	>10	-13.20	4.29	-3.08	-21.65	-4.76	0.002
	4-6	-3.21	2.37	-1.36	-7.88	1.46	0.177
	0-3	0					

DISCUSSION

The aim of this study was to determine the prevalence of anxiety, depression and QoL of type 2 diabetic patients seeking care at Buea Regional Hospital, Cameroon. This study revealed that, thirty percent of diabetic patients interviewed were depressed. This prevalence of depression is high, indicating the poor mental health status of T2D patients. This result highlights the need of a public health intervention to mitigate this high prevalence of depression. These findings corroborate with those of a study conducted in Douala, Guinea and Nigeria, which revealed a prevalence of depression among T2D [15, 16, 17]. These findings are contrary to those in Morocco, where a lower prevalence of depression [18].

Our study showed that lack of physical exercise was significantly associated with depression, agreeing with previous research carried out in Douala [15]. There was also a significant relationship between comorbidity and depression which aligns with a previous study done in Nigeria [17]. Depression was also associated with low-income level and duration of the disease.

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This is an indication that poor living condition and the duration of the disease negatively affect the mental health status (depression) of T2D patients. These findings align with those of studies conducted in Morrocco and Malysia [18,19]. Anxiety prevalence in our study was 22%, lower than the 35–40% reported in Nigeria and Guinea [16,17]. This difference may be due to cultural perceptions of anxiety, differences in healthcare-seeking behaviors, or variation in measurement tools applied across studies.

Our study showed that the duration of the disease was positively associated with anxiety. This is an indication that the longer people live with T2D disease the more anxious they become. This anxiety could be linked to the development of comorbidity or complications affecting quality of life when the disease is poorly managed. Our findings align with those of studies conducted in Romania and Morocco, which revealed an association between anxiety and the duration of the disease [20,18]. Income level was significantly associated to anxiety with people who earn less being more anxious compared to those who earn higher income. This could be attributed to health system where a vast majority of the population pays their health bills from out of pocket, meaning they are not enrolled with any health insurance scheme. Also, people with a lower level of education were more anxious than those with the higher education. This could be because people with higher education level may have good knowledge of the disease, hence a better control of their mental health.

The mental health status and psychological behavior of diabetic patients affect their self-care behavior leading to impaired QoL and the risk of developing long-term complications [3]. The evaluation of the health-related quality of life of patients could inform a public health intervention to mitigate the negative impact of the disease on patients. The evaluation of QoL is considered an important outcome measure for the management of chronic diseases [4]. The WHO-QoL-BREF used in this study is a generic instrument [21] designed to measure the health aspects that are universally essential and can be used for comparing healthy populations or two different groups of patients. In this study, we determined the QoL indices in type 2 diabetic patients attending the Buea Regional Hospital using the WHOQoL-BREF instrument [21].

The proportion of participant with poor quality of life ranged from 22.2% (environmental) to 34.8% (physical). This is an indication that a large proportion of participants experience a low QoL in our study setting. Diabetes can have a profound effect on QoL in terms of social and psychological well-being as well as physical ill health. It is one of the most psychologically demanding chronic diseases; with psychosocial factors pertinent to nearly every aspect of the disease and its treatment [48]. Studies conducted on QoL in T2DM showed that poor QoL may lead to worsening glycemic control, increased hospital visits, poor sleep, and restricted social life [23,24].

In this study, several factors have been identified as predictors of T2DM-related QoL. Our study showed that an increase in age, low-income level, duration of the disease and lack of physical exercises were linked to some domains of the QoL. Previous studies have shown that Individual's psychological state, physical health, social relationships, personal beliefs, level of independence, and relationship with their environment can affect their quality of life [3]. The high proportion of participants (70.4%) not engaging in physical activity indicates a significant lifestyle risk factor that could exacerbate diabetes-related complications.

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Doing physical exercise improved the Physical QoL of diabetic patients, as was reported in a study conducted in Ethiopia [25]. The findings of this study also align with the studies conducted in Nigeria, Gondar-Ethiopia [26,27]. This could be because physical activity activates numerous brain chemicals which leave someone happier, more relaxed, less anxious, feel better, boost confidence and improve self-esteem, improve energy levels, promote better sleep, relax muscles, making the patient happy [25]. Physical activities could also be an avenue for relaxation with friends where there could sharing of experiences which improves wellbeing.

The presence of diabetic complications was shown to decreased good health related QoL [26, 28, 29]. Interestingly, in our study, participants with comorbidities reported better QoL in some domains. This could be due to increased healthcare engagement and family support once complications are present, a finding also reported in Ethiopian studies [26]. However, this contrasts with most literature, which generally associates comorbidities with worse QoL [28,29]. Further investigation is needed to clarify this discrepancy. This was observed with the physical, social and environmental QoL. This could probably be due to the fact that those with complications are more conscious of their worsening disease condition and indulge in better management strategies, which could improve their quality of life.

Even though diabetes degrades a person's quality of life (QoL) just by being present, the quality of life could be improved by taking care of parameters such as the quality of food consumed, calorie intake, and making exercise a part of daily routine, which were shown to significantly improve the QoL of diabetic patients [30]. However, the study environment has fewer or inadequate built environment for consistent exercises coupled with the seasonal weather conditions, which are sometimes not accommodating for physical activities.

Our findings showed that the QoL was negatively associated with the duration of the disease with those patients above 10 years being more affected. The health domain mainly affected by the disease duration were the physical, social and environmental domains. A study conducted in Singapore showed similar findings [31]. These results are inconsistent with the studies conducted in Nigeria and Nepal [32,33] that showed a good QoL with the duration of the disease. Poorly managed diabetes may worsen with duration of the disease and negatively affect the QoL of patients.

In our study, low income was associated to poorer quality of life. Lower income levels were linked to poorer health-related quality of life (HRQoL) for individuals with type 2 diabetes [34]. This is probably because T2DM patients with lower income may have limited access to healthcare, healthy foods, and diabetes management resources, ultimately impacting blood glucose control and overall well-being. Majority of the study participants had monthly income below 100000frs CFA which might significantly reduce their ability to afford better living conditions that promote healthy feeding and control of diabetes mellitus. This is exacerbated by the fact that following the Cameroon health system, a vast majority of the patients do out of pocket settlement of their health bills.

CONCLUSION

The prevalence of depression and anxiety in type 2 diabetic patients at the Buea regional hospital was high. About one third of the type 2 diabetic patients had a poor quality of life in all the domains. Key predictors of depression included socioeconomic status, disease duration, and

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lifestyle factors such as physical activity. This supports the importance of holistic patient management whereas anxiety was affected by income level and duration of the disease.

The quality of life was affected by the duration of the disease, the age of patient and the presence of comorbidity. This study contributes to the limited evidence on mental health and quality of life among diabetic patients in Cameroon, offering insights that may guide context-specific interventions

Directions for Future Research.

Given the cross-sectional design, causal relationships could not be established. Future longitudinal studies across multiple health facilities in Cameroon are recommended to better capture the dynamics of mental health and QoL in diabetic patients.

Implications for Practice and Policy

These findings highlight the importance of integrating routine mental health screening into diabetes clinics at regional hospitals. For instance, brief depression screening tools such as PHQ-9 could be used during regular check-ups. Also, community-based exercise programs and subsidized health insurance could reduce both the psychological burden and financial stressors associated with diabetes.

Conflict of Interest

The authors declare no conflict of interest for this work.

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