

QUALITY OF LIFE OF PATIENTS WITH DIABETES MELLITUS AT SPECIALIZED CENTER FOR ENDOCRINOLOGY AND DIABETES IN BAGHDAD CITY

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ABSTRACT

Introduction: Diabetes mellitus is considered one of the crucial chronic diseases with several complications; people with type 2 diabetes have a lower quality of life than normal ones. Around the world, health related quality of life is widely used as a health outcome measurement. This study was conducted to assess the quality of life of patients with type diabetes mellitus (DM) and to determine some selected clinical and sociodemographic factors that affect the quality of life of these patients. **Methods:** A descriptive cross-sectional study design was used to assess the health-related quality of life of patients with diabetes mellitus. The study was achieved from 12th January 2021 to 2nd of August 2021. A purposive sample selection was used to collect data from (150) patients. The study tool was constructed by the researchers to meet the study's objectives including an adopted scale to measure health-related quality of life in diabetic patients, Participants were asked to complete three parts of the questionnaire: Part I socio-demographic data, Part II includes clinical data and Part III which measure health-related quality of life by using (Sf-12 short-form health survey) which measure health related quality of life for the diabetic patients. **Results:** The result shows the general health level of patients are fair (mean= 27.00±20.382), while physical role (mean= 25.33±43.631) and emotional role (mean= 23.33±42.437) are poor, on the other hand the physical function (mean= 48.50±37.161), bodily pain (mean=53.83±27.742), mental health (mean= 51.20±28.391), vitality (mean= 42.13±28.393) and social function (mean= 49.00±33.887) are at a moderate levels. The results show a significant association between the age, level of education, and monthly income of the patients in relation to physical and mental domains at a P-value ≤0.001. **Conclusion:** The overall health of the patients was fair despite their physical and emotional well-being levels being poor. While physical function, vitality, and bodily pain, levels were demonstrated as moderate.

Keywords: Quality of Life, Diabetes Mellitus, Baghdad.

Introduction:

Diabetes mellitus (DM) is a metabolic condition that causes hyperglycemia because of impaired insulin response, total insulin deficiency, or both. It is a non-communicable disease with high prevalence all over the world (Ajeena et al., 2019). According to the Atlas of Diabetic International Federation in 2019, there were about 463 million adults (20–79 years old) with diabetes, and by 2045, this number is expected to increase to 700 million. A total of 55 million people suffer from diabetes in the Middle East and North Africa (International Diabetes Federation, 2019). Approximately 80% of the estimated 463 million adults with diabetes worldwide live in low- and middle-income countries (Flood et al., 2021). According to the World Health Organization (WHO), in Iraq, the currency of diabetes among adults was 13.2% in 2016 and women were more likely to be affected (WHO, 2016). Diabetes kills 4.2 million people, and more than 20 million live births (1 in 6 live births) are affected by diabetes during pregnancy (International Diabetes Federation, 2019).

Diabetes being a chronic disease with number of complications deteriorates the quality of life among the people with DM Type II. Quality of life is widely used as an important health outcome measure worldwide (Thapa et al., 2019). Diabetes is a highly disabling disease, which can cause blindness, amputations, kidney disease, anemia, cardiovascular, brain complications and impairing the functional capacity and autonomy and individual quality of life (Ajeena et al., 2019). Several studies have demonstrated that the quality of life (QOL) of patients with diabetes especially those who had complications is remarkably lower than the QOL of the general population (Ahmed et al., 2019). The previous studies found that long-term DM complications had negative effects on an individual's physical, emotional, and social well-being, as well as health-related quality of life (HRQOL) (Wong et al., 2020). This study was conducted to assess the quality of life of patients with type diabetes mellitus (DM) and to determine some selected clinical and sociodemographic factors that affect the quality of life of these patients.

Methods:

A descriptive cross-sectional study design was carried out to assess the health-related quality of life of diabetic patients. The study started on the 12th of January 2021 till 2nd of August 2021. A Non-probability purposive sample of (150) patients with diabetes were randomly selected when attending the specialized center for endocrinology and diabetic to seek medical care. The study was conducted at the specialized center for endocrinology and diabetes, which located in Baghdad city / Al- Rusafa sector. This center was established in year 2000 in response to the increased numbers of the patients who need medical care and follow up by the specialists in Baghdad. The center received about (4701) patients in September 2017, (2274) of them were diabetic patients. The study sample was chosen by using the following criteria: Patients who accept to participate in the study and patients with type I and type II diabetes mellitus in Baghdad with different age groups. Patients how refused to participate in the study and Patient who did not complete the form completely were excluded from the study.

A final total of (160) patients with diabetes, who were attending the center during the time of the study period, met the study criteria and agreed to participate. (150) patients of them were assigned to take a part in the study. A close ended questionnaire format was used to collect data with an adopted scale (SF12) to measure the health-related quality of life for diabetic patients. The questionnaire included three parts and were distributed as the followings: Part I: socio-demographic: This part is about the socio-demographic characteristics of the participants, which were collected from the patients, and it includes: (Age, gender, level of education, marital status, monthly income, occupational status, residency, Body Mass Index (BMI), height, weight, and smoking) Part II: Clinical data of the patients: This part is about the clinical data of diabetic patients and consists of five items, including (type of diabetes mellitus, duration of disease, type of medication, presence of chronic disease [hypertension, cardiovascular disease, Rheumatic Arthritis, Renal Failure, Retinopathy, and diabetic foot). Part III Sf-12 short form health survey to measure patients' quality of life: The SF-12 is a valid alternative to the SF36 for use in large surveys of general and specific populations which adopted from Medical Outcomes Trust and Quality Metric Incorporated, (2002) and used to measure the level of health-related quality of life for the purpose of the study. The SF-12 contains 12 items all SF-12 items came from the SF-36 Consist of eight dimensions: general health consists of (1) items, physical functioning consists of (2) items, limitation in role due to physical health problems consist of (2) items, role limitations due to emotional problems consist of (2) items. Limitation in role due to mental health consist of (2) items, bodily pain consists of (1) item, vitality consist of (1) item and social functioning consists of (1) item.

SF-12 is a registered trademark of Medical Outcomes Trust. Sf-12 Arabic version It was translated by the academic translator in King Fahd University Hospital Medical Education Center. For content validity, three consultants from the Department of Family and Community Medicine reviewed the Arabic version. They translated it to English again and their translation was compared with the original English version of the questionnaire (Al-Shehri et al., 2008). The physical component summary (PCS) and mental component summary (MCS) scores were examined for reliability (internal consistency, test-retest), construct validity (convergent and discriminant, structural), and criterion validity (concurrent and predictive). PCS and MCS demonstrated high internal consistency (Cronbach's alpha—PCS: 0.87, MCS: 0.86) (Shah & Brown, 2020).

The purpose of the study was explained to the participants verbally, and they were asked to take part voluntarily. They also stated that they have the right to refuse or withdraw from the study at any time. The use of good communication skills with participants was emphasized as a means of creating a relaxed atmosphere during the interview.

Statistical analysis was performed by using descriptive statistical procedures (frequency, percentage, mean and standard deviation) so as inferential statistical procedures (Pearson correlation coefficient, Spearman's correlation). Statistical Package for the Social Sciences (SPSS) version 23 was used in this study.

Results:

According to the study findings, the majority of the sample's age group (26.0%) is between 51 and 60 years old. In terms of gender, the results show that (61.3 %) are female and (38.7%) are male. At educational level, the study found that (29.3 %) of the participants have completed elementary school, while (17.3 %) have completed intermediate school.

As shown in (table 1) most of the participants, (66.7%) are married. In respect of occupation, half of the participants were housewives (49.3%), with the remainder working(%26.0) Regarding monthly income, the study findings found that (46.6%) of the sample have insufficient monthly incomes. The table demonstrates most of the samples are living in the urban area (71.3%) and the minority of the sample live in suburban (24.7%). Regarding BMI results show that a higher percentage of participants (35.3%) are overweight. The great majority of the persons in the sample are nonsmokers (90.0 %).

Table 1. Distribution of Participants by their socio-demographic data:

List	Variable	Frequency	Percentage	
1.	Age group	Less than 10	1	0.7
		11 – 20	8	5.3
		21 – 30	11	7.3
		31 – 40	15	10.0
		41 – 50	33	22.0
		51 – 60	39	26.0
		61 – 70	35	23.3
		71 – 80	7	4.7
		81 and more	1	0.7
2.	Gender	Male	58	38.7
		Female	92	61.3
3.	Level of Education	Illiterate	25	16.7
		Read and write	13	8.7
		Elementary School	44	29.3
		Intermediate School	26	17.3
		High School	12	8.0
		Diploma	14	9.3
		Bachelor	13	8.7
		Higher education	3	2.0
4.	Marital Status	Married	100	66.7
		Single	18	12
		Widowed	25	16.7
		Divorced	5	3.3
		Separated	2	1.3
5.	Occupational status	Working	39	26.0
		Not working	28	18.7
		Student	9	6.0
		Housewife	74	49.3
6.	Monthly Income	Sufficient	28	18.7
		Somewhat sufficient	52	34.7
		Insufficient	70	46.7
7.	Residency	Urban	107	71.3
		Suburban	37	24.7
		Rural	6	4.0
8.	BMI	Less than 18.5 (Underweight)	7	4.7
		18.5 - 24.9 (Normal weight)	32	21.3
		25 - 29.9 (Overweight)	53	35.3
		30 - 34.9 (Obese class I)	36	24.0

		35 - 39.9 (Obese class II)	12	8.0
		40 and More (Obese class III)	10	6.7
9.	Do you smoke?	No	136	90.7
		Yes	14	9.3

Table 2. Distribution of clinical characteristics of the study sample:

List	Variable	Frequency (F)		Percentage (%)	
1.	Type of Diabetes mellitus	Type I		38	
		Type II		112	
2.	Duration of disease	Less than 1 year		8	
		1-5 years		44	
		6- 10 years		34	
		10 years and more		64	
3.	Type of treatment	Yes		No	
		F	%	F	%
		Oral Tablets		83	
		Insulin		76	
		Diet regimen only		11	
4.	Do you experience any chronic disease?	108	72.0	42	28.0
5.	Type of Chronic disease	Yes		No	
		F	%	F	%
		Hypertension		63	
		Cardiovascular diseases		28	
		Rheumatic Arthritis		61	
		Renal Failure		5	
		Retinopathy		44	
		Diabetic foot		10	

Table 2 illustrates the clinical data of individuals, the majority of whom (74.7 %) have type 2 diabetes. Table 2 displays that less than half of the participants (42.7%) have had diabetes for more than 10 years. In concerns of treatment, slightly more than half of the patients (55.3%) take oral tablet medications, while (50.7 %) are using insulin. According to the statistics, most of the people in the sample (72.0%) had chronic illnesses, the most common of which were hypertension (42.0%) and rheumatoid arthritis (40.7%).

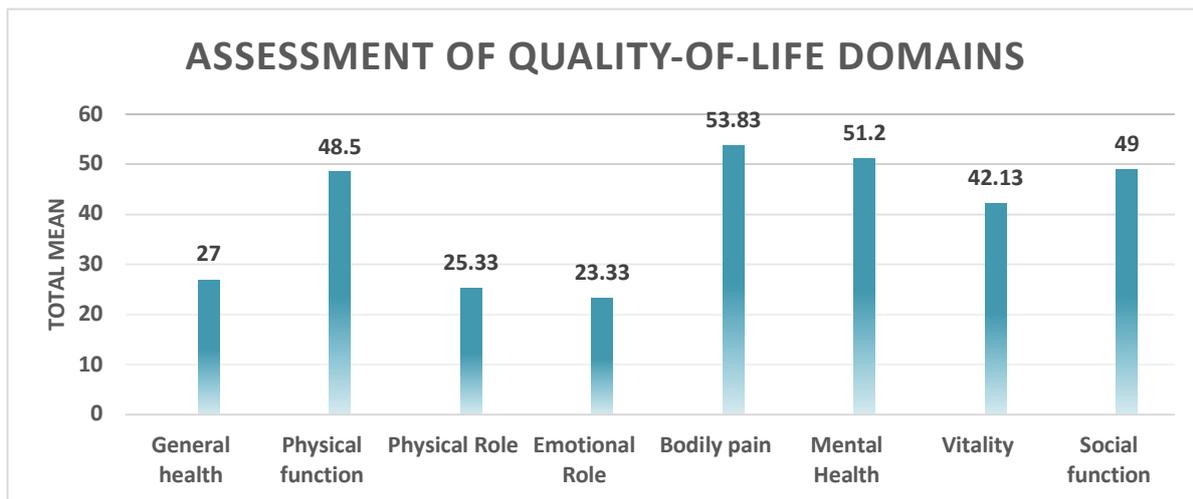


Figure 1: Assessment of quality-of-life domains for the study participants

Assessment of quality-of-life domains as shown in Figure 1, The result shows the general health level of patients are fair (mean= 27.00, SD=.20.382), while physical role (mean= 25.33, SD= 43.631) and emotional role (mean= 23.33, SD= 42.437) are poor, on the other hand the physical function (mean= 48.50, SD= 37.161), bodily pain (mean=53.83, SD=27.742), mental health (mean= 51.20, SD= 28.391), vitality (mean= 42.13, SD= 28.393) and social function (mean= 49.00, SD= 33.887) are at a moderate levels.

Table 3. The Relationship between sociodemographic data and Quality of life domains (Physical and Mental domains):

Variables	Correlation	Physical	Mental
Age	Pearson C.	-.244-	-.187-
	P Value	.003	.022
Gender	Pearson C.	-.016-	-.123-
	P Value	.842	.133
Level of Education	Pearson C.	.288	.217
	P Value	0.001	.008
Marital Status	Pearson C.	-.142-	-.008-
	P Value	.083	.924
Occupational status	Pearson C.	-.133-	-.211-
	P Value	.106	.010
Monthly Income	Pearson C.	-.324-	-.299-
	P Value	0.001	0.001
Residency	Pearson C.	.022	.049
	P Value	.794	.549
BMI	Pearson C.	-.273-	-.102-
	P Value	.001	.216
Do you smoke?	Pearson C.	-.016-	.032
	P Value	.847	.697
Number of cigarettes / days	Pearson C.	-.042-	-.016-
	P Value	.886	.958
Duration of smoking	Pearson C.	.039	.186
	P Value	.895	.525

Table 3 shows that there is a highly significant relationship between the patients' age (.003) (.022), level of education (0.001) (.008) and monthly income (0.001) with both physical and mental domains respectively, while there is highly significant relationship between BMI and physical domain (.001). In relation to mental domain there is a highly significant relation with regards to participants' occupational status (.010) with a significant relation with their age (.022), at p-value level (0.05) for significance and (0.01) for the highly significant relationships.

Table 4. The Relationship between clinical data and Quality of life domains (Physical and Mental domains

Variables	Correlation coefficient	Physical	Mental
Type of Diabetes mellitus	Pearson C.	-.117-	-.062-
	P Value	.154	.454
Duration of disease	Pearson C.	-.110-	-.200-
	P Value	.179	.014
Oral Tablets	Pearson C.	.072	-.059-
	P Value	.383	.470
Insulin	Pearson C.	-.012-	.071
	P Value	.880	.387
Diet regimen only	Pearson C.	-.087-	.022
	P Value	.290	.788
Do you experience any chronic disease?	Pearson C.	.275	.143
	P Value	0.001	.080
Hypertension	Pearson C.	.117	.014
	P Value	.152	.864
Cardiovascular diseases	Pearson C.	.239	.216
	P Value	.003	.008
Rheumatic Arthritis	Pearson C.	.333	.171
	P Value	0.001	.036
Renal Failure	Pearson C.	.173	.040
	P Value	.034	.627
Retinopathy	Pearson C.	.172	.213
	P Value	.036	.009
Diabetic foot	Pearson C.	.081	.030
	P Value	.323	.714

Concerning the correlation between health domains and clinical data, the results found that there is a significant relationship between physical aspect and some variables, including: chronic disease (.001), cardiovascular diseases (.003), rheumatic arthritis (0.001), renal failure (.034), and retinopathy (.036). While there is a relationship between mental aspect with some variables, including: duration of disease (.014), cardiovascular diseases (.008), rheumatic arthritis (.036), and retinopathy (.009), at p-value level (0.05) for significance and (0.01) for the highly significant relationships.

Table 5: Correlation between Physical and Mental domains

Domains		Physical	Mental
Physical	Spearman's Correlation Coefficient	1.000	.511
	P value	.	0.001
Mental	Spearman's Correlation Coefficient	.511	1.000
	P value	0.001	.

Table 5 findings demonstrate there is a highly significant relation between physical and mental domains of the quality of life concerning each other.

Discussion:

According to the study findings, the highest percentage of the sample's age group (26.0%) is between 51 and 60 years old. This differs with a study by (Wong, et al., 2020) which stated most sample age was aged ≥65 years (60%) and agrees with a study by (Al Ayed et al., 2020) which stated most age samples were between 51-60 years old. The risk of diabetes rises with age, contributing to an increase in the prevalence of diabetes in persons as they get older.

In terms of gender, the result shows that (61.3%) are females and (38.7%) are males. This finding was supported by studies done by (Ababio et al., 2017) in Nigeria and (Mehta, et al., 2015) in Nepal. They also found most diabetic patients are females and, according to the international diabetic federation, most diabetic patients are females (International Diabetes Federation, 2019). But a study conducted by (Tiwari et al., 2016) showed a higher percentage of subjects are males (58.1%).

Regarding the educational level, the study found that (29.3 %) of the participants had completed elementary school. These findings are supported by the study done by (Ghailan & Al-Akaily, 2018) in al-Mosul, Iraq. They also found that the educational level of diabetic patients, the highest percentage was (40.0%) who graduated from elementary schools. On the other hand, (Dhillon et al., 2019) in Malaysia, found the highest percentage was (48.0%) who graduated from secondary school. among the respondents, (66.7%) are married. This finding is similar to the findings of other research such as (Tietjen et al., 2021) and (George and Premkumar, 2017), which found that most of the samples were married.

In respect of occupation, half of the participants are housewives (49.3%). This percentage coincides with (Asa`ad et al., 2019) that found half of the respondents are housewives (50.6) and contradicts the findings of (Tonetto et al., 2019).in Brazil (5.3%) of patients are housewives.

Regarding economic status, 86% of the study sample is without enough monthly income. This is consistent with another study (Stojanović et al., 2018) which revealed in their study that most of the study sample had insufficient monthly income. These results disagree with (Imad et al., 2021) who illustrated that 60.8% of the sample were of moderate income. Chronic diseases including diabetes consider as a burden physically, psychologically, and financially so as the economic status of Iraqi people especially in COVID 19 era were decreased in obvious way. The results demonstrate that most of the people in the sample live in an urban area (71.3 %) This result corresponds to the findings of a study conducted by (Abedini et al., 2020) which highlighted that the majority of respondents lived in a city (93.0%). This finding might be related to the fact that the incidence of diabetes is higher in urban areas than in rural areas, and that rural residents are more likely to engage in daily physical activity than urban patients, making them less likely to get diabetes (Mohammed-Ali & Hamza, 2016).

The BMI results show that a higher percentage of participants (35.3%) are overweight. (Al Ayed et al., 2020) found a higher proportion of participants were overweight (46.9%) as opposed to the findings of (Hsieh et al., 2020) (36.31%) had a normal BMI. Non-smokers make up most of the participants in the sample (90.0 %) was consistent with that of (Ananchaisarp et al., 2019), who found that the vast majority of the participants were nonsmokers (93.0%). This contradicted the findings of (Khunkaew et al., 2019), who found that most of the sample (30.0%) were smokers. According to the findings, people with type II diabetes have a greater percentage (74.7%) than those with type I diabetes. Which was corroborated with Rwegerera et al., 2018, that showed that most of the samples had type 2 diabetes. The results show that the duration of the disease, the higher percentage (42.7%) is for those who have been suffering from the disease for a period of 10 years or more. The findings are in line with those of (Ahmed et al., 2019), who observed a higher proportion of patients with an illness duration of 10 years or more.

In regard to medication, slightly more than half of the patients (55.5%) use oral tablet medications. This conclusion was supported by (Alshayban & Joseph, 2020). They observed that the majority of patients were taking oral tablets. While disagreeing with a study done in Brazil (Tonetto et al., 2019) that showed the most common drug used was insulin (41,92). Moreover, the majority of the study's participants had a chronic condition (72.0 %). The most frequent conditions were hypertension (42.0 %) and rheumatoid arthritis (40.0%). These results were similar to the findings of prior research done in Palestine (Khdour et al., 2020). They discovered that more than half of the patients had chronic illnesses, with hypertension (51.6 %) and rheumatoid arthritis being the most frequent. These results do not fit with a study conducted in Kufa, Iraq which found most patients suffered from heart disease (40.0%). (Mohammed-Ali & Hamza, 2016)

In the context of general health, the statistics demonstrate the patient's general health is fair (27.00). This outcome consists with a study done by (Feyisa et al., 2020) that shows the general health of participants is fair (30.20). According to the findings of the study, physical function (48.50), bodily pain (53.83), mental health (51.20), vitality (42.13) and social function (49.00) are at moderate levels. These results were supported by (Jiao et al., 2017) study that stated physical, mental health, vitality, and social function were moderate scores. The results show that both the physical and emotional roles have poor ratings. This is consistent with the findings of (Feyisa et al., 2020), who claimed that the physical and emotional roles had poor results.

There is a highly significant relationship between the patients' age (.003), level of education (0.001) (.008) and monthly income (0.001) with both physical and mental domains respectively. This result was reinforced by (Stojanović et al., 2018) that showed there is a highly significant relationship between age (.001), level of education (.001) and monthly income (.008) (.003) with both physical and mental domains respectively. These results are inconsistency with (Degu et al., 2019) that stated no significant relationship between monthly income with physical and mental domains. The statistical shows there is a highly significant relationship between BMI and the physical domain (.001). these results are constant with (Ananchaisarp et al., 2019) that showed there is a highly significant relationship between BMI and physical health (.003). In relation to mental domain there is a highly significant relation with regards to participants' occupational status (.010) with a significant relation with their age (.022). these findings are in fit with (Degu et al., 2019) that show there is a highly significant relation between mental domain and occupational status with significant with their age.

Concerning the correlation between health domains and clinical data, the results found that there is a significant relationship between physical aspect and some variables, including cardiovascular diseases (.003), rheumatic arthritis (0.001), renal failure (.034), and retinopathy (.036). these results are contrary to (Pham et al., 2020) study that show there is no significant relationship between the physical aspect and some clinical data, including cardiovascular disease, retinopathy, and renal failure. In terms of relationships between the mental aspect and clinical data, the findings show that there is a significant association with disease duration (.014), cardiovascular diseases (.008), rheumatoid arthritis (.036),

and retinopathy (.036). these findings are like (Jiao et al., 2017) that clarified there is a significant mental aspect and some clinical data, including cardiovascular disease and retinopathy. Several challenges were encountered throughout the completion of this study, including data collection duration is synchronized with the pandemic of corona virus. The center's policy regarding patient attendance. Time of data collection is simultaneously with Ramadan which was a burden during data collection

Conclusion:

The study revealed that diabetic patient's quality of life was poor in terms of physical and emotional role, while fair in terms of general health. In addition, the quality of life was moderate in terms of mental health, physical function, vitality, bodily pain, and social status. There is a strong relationship between several sociodemographic data (age, level of education, monthly income, and occupational status) with physical and mental domains. There is a significant relationship between the physical domain and the clinical data (chronic disease, cardiovascular diseases, rheumatic arthritis, renal failure, and retinopathy). Whilst there is a relationship between mental domain and clinical data (duration of disease, cardiovascular diseases, rheumatic arthritis, and retinopathy). Moreover, there is a highly significant relationship between the physical domain and the mental domain.

Acknowledgements

We would like to express our sincere appreciation for all of those who have support and help us through our journey in this life. Finally, the last but not the least, our deep thanks and respect to the patients who participated in the present study despite of their suffering.

Conflicts of Interest

The author declares no conflicts of interest.

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