Original Article

The relationship between the duration of diabetes and dimensions of general health and quality of life associated with the health of diabetic patients

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Abstract

Introduction: Diabetes is one of the most common chronic diseases in the world. Diabetes has a major impact on the quality of life of patients. The purpose of this study is the relationship between the duration of diabetes and dimensions of general health and quality of life associated with the health of diabetic patients. **Materials and Methods:** In this cross-sectional-analytical study, diabetic patients with more than 1-year history who were not suffering from other chronic diseases were included in the study. Then, using 15 questions for diabetes quality of life, questionnaires and GHQ28 general health were investigated in terms of quality of life and general health. The data were statistically analyzed using SPSS version 24 software. **Results:** The average age was equal to 42.8 ± 14.4 years (with a median of 40 years). The average duration of the disease in the patients was equal to 7.7 ± 7.2 years (with a median of 5 years). The average quality of life score of the patients was equal to 50.3 ± 7.8 (out of 75). A negative and significant correlation between age and quality of life of patients was observed ($P < 0.001$). The duration of the disease had a direct and significant relationship with the general health score. But a significant difference between the quality of life of married and single people was not observed ($P = 0.613$). A direct and significant relationship between duration of disease, age with physical symptoms ($P < 0.001$), anxiety and insomnia ($P = 0.001$), social activity failure ($P = 0.013$), and depression ($P = 0.001$) was observed and was also observed with the overall score of general health ($P < 0.001$). **Discussion and Conclusion:** The duration of diabetes disease affects the quality of life and general health of diabetic patients, and discomfort, depression, and anxiety are the main problems that affect the quality of life of diabetic patients.

Keywords: Depression, diabetes, general health, quality of life

Introduction

Diabetes is defined as metabolic disorders caused by chronic hyperglycemia, which is due to impaired insulin secretion and/or action. The number of diabetic patients is increasing rapidly. It is predicted that the number of adults with diabetes will increase by about 69% in developing countries and 20% in developed countries until 2030.[1] Diabetes and its complications can cause pre-mature death and disability and have a significant financial impact on systems and individuals.[1,2] Patients' views and perceptions are often overlooked when relying on physiological criteria. Psychological and social factors are also strong indicators of mortality and complications.[3] The goals of treatment for patients with diabetes are generally as follows: control blood glucose levels, relieve signs and symptoms associated with hyperglycemia, and prevent short-term acute complications such

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as diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic non-ketotic syndrome (HHNK), preventing long-term chronic macro-vascular and micro-vascular complications and ultimately maintaining or improving patients' quality of life (QoL) and reducing mortality.[4] The evidence shows that the emergence of mental and social problems hurts the patient's ability to perform and continue the recommended medical care. Therefore, contrary to medical follow-up and continuation of drug treatments, the decrease in the QoL may not produce appropriate treatment results.[4,5] The patients who perceived higher levels of QoL have shown that they have better social support, accept the seriousness and consequences of the disease, and have fewer problems in managing their diabetes.[6] Various studies have shown that the existence of diseases and complications has an inverse relationship with the QoL of patients. In addition, several factors such as age, type, and number of complications and duration of diabetes were related to QoL.[7] Therefore, several questionnaires have been developed by World Health Organization (WHO) to measure the QoL, including WHOQOL-100 and WHOQOL-BREF; among these, WHOQOL-BREF measures four areas, which are as follows: mental health, physical health, environment, and social relations.[8] This study was conducted with the aim of investigating the relationship between the duration of diabetes and dimensions of general health and QoL associated with the health of diabetic patients in Semnan (Iran).

Materials and Methods

Type of research and studied community

This study is based on a cross-sectional analytical study. The studied population included all diabetic patients referred to the endocrinology clinic of Kowsar Hospital of Semnan University of Medical Sciences between the years 2021 and 2022.

Sampling and sample size

In this study, sampling was performed by the easy sampling method among all diabetic patients referred to the endocrinology clinic of Kowsar Hospital between the years 2021 and 2022; among these, the sample size was considered equal to the total number of referring patients and equal to 250 people, which was reduced to 200 people after investigating the inclusion criteria.

Inclusion and exclusion criteria

Having full patient consent and having diabetes diagnosed by an endocrinologist doctor were considered as the inclusion criteria into the study. Also, unwillingness to participate in the study; defects in the medical record; having chronic diseases including chronic kidney failure requiring dialysis, chronic heart failure, heart attack, asthma, thyroid disease, brain stroke, blindness, mental illness, cancer, and rheumatoid diseases; and amputation of one or more organs were considered as the exclusion criteria of this study.

Data collection tool

In this study, two types of shortened questionnaires of the diabetic quality of life (DQOL) and GHQ28 standard general health questionnaire were used.[9] The shortened questionnaire on the DQOL includes satisfaction with diabetes, effects of diabetes, concerns related to diabetes, and social and occupational concerns. The validity and reliability coefficient of the mentioned questionnaire were calculated based on Cronbach's alpha, 0.77, which indicates the appropriate validity of this questionnaire.

Work method

This study is based on a cross-sectional analytical method after the approval of the project in the Research Center of the Faculty of Medicine of Semnan University of Medical Sciences and the approval of the ethics committee in medical research according to the code of ethics IR.SEMUMS.REC.2018.096; the statistical population includes all diabetic patients between 20 and 70 years of Semnan City who at least 1 year had passed from their diabetes duration. Sampling was performed using an easy sampling method among diabetic patients referred to the endocrinology clinic of Semnan University of Medical Sciences (located in Kowsar Hospital, Semnan province). Diabetic patients were selected from among the out-patients who were diagnosed by the diabetes endocrinologist and identified their type and had the inclusion criteria in the study up to the required limit of at least 200 people. After obtaining written consent from the patients, the necessary demographic information (age, gender, time duration of treatment, education level, etc.) was extracted and recorded from the patient's files. After providing complete explanations about how to conduct the research, the questionnaires were completed by the patients. Then all the data were analyzed using SPSS version 24 software.

Data analysis method

The data analysis was performed using Kolmogorov–Smirnov, Student's t, Mann–Whitney, Pearson's correlation coefficient, and linear regression statistical tests. In all the tests, the confidence level was equal to 95% and the significance level was considered less than 5%; the software used for data analysis was SPSS version 24 statistical analysis software.

Ethical considerations

Participation in the study was completely optional, and before the patients were included in the study, a written consent form was filled out completely informed. No name of the patients was mentioned during the study in any part of the study, and all the information of the patients will remain completely confidential with the researcher and the researcher is committed to keeping their information.

Results

In this study, a total of 202 diabetic patients from Semnan City were examined. Among the examined patients, 63.9% (129 people) were women and the rest of them (73 people) were men. The mean ± standard deviation of the age of the patients was equal to 42.8 ± 14.4 years (with a median of 40 years). The lowest age was related to 12 years, and the highest age was

reported 79 years. Among the examined patients, 83.2% (168 people) were married and the rest of them were single. In 60.9% of patients (123 people), the prescribed treatment was oral drugs. The mean ± standard deviation of the duration of the disease in patients was estimated equal to 7.7 ± 7.2 years (with a median of 5 years). The minimum duration of the disease was 1 month, and the maximum duration of the disease was 30 years [Table 1].

The results of the examination of the factors related to the QoL and general health of the patients indicated that the mean ± standard deviation of the QoL score of the patients was equal to 50.3 ± 7.8 (out of 75) with a median of 50 years.

Table 1: The distribution of individual characteristics of diabetic patients in Semnan City

Characteristic	Number	Percentage
Gender		
Man	129	63.9
Woman	73	36.1
Age (years)		
>30	35	17.3
39-30	60	29.7
49-40	37	18.3
59-50	31	15.3
60 ≤	39	19.3
Marital status		
Married	168	16.8
Single	34	83.2
Type of treatment		
Oral	123	60.9
Oral and insulin	79	39.1
Duration of disease		
>60	92	45.5
60-119	43	21.3
120 ≤	67	33.2

The lowest score was estimated at 27, and the highest score was 75. About 76.7% (155 people) had a high QoL (a score higher than 45), 22.8% (46 people) average QoL (31–45), and only 0.5% (one person) low QoL (score 30–15). The mean ± standard deviation of the QoL score was equal to 50.9 ± 7.7 for women (with a median of 51) and 49.2 ± 7.8 for men (with a median of 50), and no significant difference was observed ($P = 0.140$). About 79.8% of women and 71.2% of men had a high QoL. A negative and significant correlation between age and QoL of patients was observed ($r = 0.284$, $P < 0.001$). In other words, when the age increased, the QoL among diabetic patients decreased. The mean ± standard deviation of the QoL score was equal to 50.4 ± 0.8 in married people (with a median of 50) and 49.7 ± 6.3 in single people (with a median of 50), and no significant difference was observed between the QoL of married and single people ($P = 0.613$). About 76.2% of married people and 79.4% of single people had a high QoL score. The mean ± standard deviation of the QoL score in patients under oral treatment was equal to 52.1 ± 7.3 (with a median of 52), and in patients under oral treatment with insulin, it was 46.0 ± 6.4 (with a median of 47), and this difference was statistically significant ($P < 0.001$). About 88.6% of patients under oral treatment and 58.2% of patients under oral treatment with insulin had a high QoL score. A negative and significant correlation between the duration of the disease and the patient's QoL was observed ($r = 0.394$, $P < 0.001$). In other words, when the duration of diabetes in patients increased, their QoL decreased. The mean and standard deviation of the QoL score in the duration of the disease are listed in Table 2. About 88.0% of patients who had less than 5 years of illness, 90.7% of patients with the duration of the disease between 5 to 10 years, and 52.2% of patients with the duration of the disease more than 10 years had a high QoL [Table 2].

Table 2: The mean and standard deviation and distribution of QoL scores of diabetic patients in Semnan City based on individual characteristics

Characteristics	Mean	Standard deviation	Correlation coefficient*	*P*	Low		Medium		High	
					Number	Percentage	Number	Percentage	Number	Percentage
Gender										
Man	50.9	7.7	-	0.140	1	0.8	25	19.4	103	79.8
Woman	49.2	7.8			--	--	21	28.8	52	71.2
Age (years)			-0.284							
>30	0.51	5.8		0.001	--	--	5	14.3	30	85.7
39-30	3.53	7.2			--	--	8	13.3	52	86.7
49-40	2.51	9.9			--	--	12	32.4	25	67.6
59-50	6.48	5.5			--	--	7	22.6	24	77.4
60 ≤	5.45	7.10			1	2.6	14	35.9	24	61.5
Marital status										
Married	50.4	8.0	--	0.613**	1	0.6	39	23.6	128	76.2
Single	49.7	6.3			--	--	7	20.6	27	79.4
Type of treatment			--	0.001						
Oral	53.1	7.3			--	--	14	11.4	109	88.6
Oral and insulin	46.0	6.4			1	1.3	32	40.5	46	58.2
Duration of disease										
>60	52.3	6.8	-0.394	>0.001	--	--	11	12.0	81	88.8
60-119	52.5	7.4			--	--	4	9.3	39	90.7
120 ≤	46.1	7.6			1	1.5	31	46.3	35	52.2

*Pearson's correlation coefficient. **Student's *t*

In order to investigate the simultaneous effect of variables, linear regression analysis was performed. The results showed that the duration of the disease had an inverse correlation ($P = 0.023$) and also the type of treatment showed a significant relationship with the QoL ($P < 0.001$). So the patients under drug treatment had a higher QoL. Other variables were excluded from the model [Table 3].

The mean ± standard deviation of the general health score in diabetic patients of Semnan City was equal to 25.1 ± 13.4 (out of 84). About 47.1% of patients had mild or higher disorder. The mean ± standard deviation of the physical symptoms sub-scale was 7.5 ± 4.2, that of the anxiety and insomnia sub-scale was equal to 7.2 ± 4.3, that of the social activity sub-scale was equal to 7.4 ± 3.9, and that of the depression sub-scale was equal to 2.9 ± 3.8. The results of Friedman's test showed that the scores of general health components were significantly different ($P < 0.001$). So the score of the depression sub-scale was lower than that of the rest of the scales. The results of the scores are listed in Table 4.

The examination of the factors related to general health showed that the score of the physical symptoms ($P = 0.471$), anxiety and insomnia ($P = 0.552$), social activity failure ($P = 0.753$), and depression ($P = 0.994$) sub-scales had no significant difference between male and female patients. Also, there was no significant difference in the general health score of men and women ($P = 0.603$) [Table 5].

A direct and significant correlation between age and the score of physical symptoms ($r = 0.287$, $P < 0.001$), anxiety and insomnia ($r = 0.286$, $P < 0.001$), social activity failure ($P = 0.012$), $r = 0.177$), and depression ($P < 0.001$, $r = 0.215$) sub-scales was observed. Also, there was no significant difference in the general health score of men and women ($P = 0.603$). Also, there was a direct and significant correlation between age and the overall score of general health ($P < 0.001$, $r = 0.296$) [Table 6]. In other words, the general health score decreased with increasing age.

The score of the physical symptoms ($P = 0.640$), anxiety and insomnia ($P = 0.520$), social activity failure $P = 0.623$), and depression ($P = 0.650$) sub-scales had no significant difference between married and single patients. Also, the overall score of general health of married and single patients had no significant difference ($P = 0.891$). The score for the physical symptoms ($P = 0.001$), anxiety and insomnia ($P = 0.019$), and depression ($P = 0.014$) and also the overall score of general health ($P = 0.004$) of patients under oral treatment significantly were less than that of patients under oral treatment and insulin [Table 7].

A direct and significant correlation between the duration of the disease and the score of physical symptoms ($r = 0.322$, $P < 0.001$), anxiety and insomnia ($r = 0.235$, $P = 0.001$), social activity failure ($P = 0.013$, $r = 0.175$), and depression ($P = 0.001$, $r = 0.231$) sub-scales and also the overall score of general health was observed ($P < 0.001$, $r = 0.295$) [Table 8].

Table 3: The results of regression analysis of factors affecting the QoL of diabetic patients

Variable's Name	Regression coefficient (β)	Standard error for (β)	*P*
Duration of disease	0.016	0.007	0.023
Type of treatment*	5.26	1.28	>0.001

*Code (1) Drug treatment and code (0) Drug and insulin treatment

Table 4: The mean and standard deviation and distribution of general health scores and its subscales in diabetic patients of Semnan City

General health components	Mean	Standard deviation	Median	Interquartile range	Degree of quality of life					
					None or at least limit		Mild		Severe	
					Number	Percent	Number	Percent	Number	Percent
Physical symptoms (Out of 21)	7/5	4/2	7/0	4/0	92	45/5	78	38/6	8	4/0
Anxiety and insomnia (Out of 21)	7/2	4/3	7/0	6/0	95	47/0	71	35/1	7	3/5
Social activity failure (Out of 21)	7/4	3/9	7/0	4/0	72	35/6	103	51/0	20	3/5
Depression (Out of 21)	2/9	3/8	1/0	5/0	169	83/7	22	10/9	11	--
General health (Out of 21)	25/1	13/4	22/0	17/0	106	52/9	68	33/7	24	2/0

Table 5: The mean and standard deviation of general health scores and its subscales in diabetic patients of Semnan City

General health components	Gender				*P**
	Female		Male		
	Mean	Standard Deviation	Mean	Standard Deviation	
Physical symptoms	7.4	4.4	7.6	4.0	0.471
Anxiety and insomnia	7.1	4.3	7.5	4.3	0.552
Social activity failure	7.3	4.0	7.6	3.8	0.753
Depression	2.8	3.5	3.2	4.3	0.994
General health (Overall)	24.6	13.3	25.9	13.6	0.603

*Mann-Whitney test

In order to investigate the simultaneous effect of variables on the general health score, the results showed that only the duration of the disease had a significant relationship with the general health score ($P < 0.001$, β+ SE (β) =0.54 ± 0.12). So the value of 0.54 is added to the general health score for every year of increase in the duration of the disease. In this analysis, the type of treatment and the duration of the disease were included in the model, and the type of treatment was excluded from the model. The duration of the disease had a significant relationship with the score of the physical symptoms ($P < 0.001$, β+ SE (β) = 0.19 ± 0.04) (for every year increase in the duration of the disease, the value of 0.19 is added to the score of this sub-scale), anxiety and insomnia ($P = 0.001$, β+ SE (β) = 0.14 ± 0.04) (for every year increase in the duration of the disease, the value of 0.14 is added to the score of this sub-scale), social activity failure ($P = 0.013$, SE (β) + β =0.09 ± 0.04) (for every year increase in the duration of the disease, the value of 0.09 is added to the score of this sub-scale), and depression sub-scale ($P = 0.001$, SE (β) + β =0.12 ± 0.04) (for every year increase in the duration of the disease, the value of 0.12 is added to the score of this sub-scale) [Table 8].

Discussion

Today, in medical care, the control of chronic diseases has special importance; recovery from chronic diseases is not possible, but death is not also imminent. Therefore, the goal of medical care is to improve the QoL; if improving the QoL is an important goal in medical treatment, it should be considered as an outcome of medical research.[10] There is a mutual relationship between disease and QoL, and physical disorders and physical symptoms have a direct effect on all aspects of QoL. Diabetes is the most common metabolic disorder with numerous complications, including cardiovascular complications, retinopathy, and kidney disease, which increase mortality and decrease patients' survival.[11] In our study, about 202 diabetic patients of Semnan

Table 6: The mean and standard deviation of general health scores and its subscales based on the different ages in diabetic patients of Semnan City

General health components	Age (Year)								*P**
	30>		39-30		49-40		59-50		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
Physical symptoms	6.4	3.6	6.5	3.9	6.6	4.3	8.9	3.9	<0/001
Anxiety and insomnia	6.3	4.1	6.0	4.0	7.0	4.3	7.8	4.1	<0/001
Social activity failure	6.0	3.7	6.9	4.3	6.7	2.8	7.2	3.4	0/012
Depression	2.5	2.8	2.2	2.9	2.2	3.6	3.5	4.6	<0/001
General health (Overall)	22.4	10.6	21.5	11.9	22.6	12.8	27.4	12.7	<0/001

*Pearson Correlation coefficient

Table 7: The mean and standard deviation of general health scores and its subscales based on the type of treatment in diabetic patients

General health components	Type of treatment				*P**
	Oral treatment		Oral treatment with insulin		
	Mean	Standard Deviation	Mean	Standard Deviation	
Physical symptoms	6.6	3.6	8.8	4.7	0.001
Anxiety and insomnia	6.6	4.1	8.2	4.4	0.019
Social activity failure	7.2	0.4	7.8	3.8	0.235
Depression	2.3	3.2	3.9	4.5	0.014
General health (Overall)	22.7	12.2	28.7	14.4	0.004

*Mann-Whitney test

Table 8: The mean and standard deviation of general health scores and its subscales based on the duration of disease in diabetic patients

General health components	Duration of disease (Month)							*P**
	60>		60-119		120≤		Correlation coefficient	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation		
Physical symptoms	5.9	3.6	8.1	3.2	9.1	4.9	0.322	<0.001
Anxiety and insomnia	6.0	3.9	7.7	3.8	8.5	4.8	0.235	0.001
Social activity failure	7.0	3.5	6.6	3.6	8.5	4.4	0.175	0.013
Depression	2.2	3.3	2.6	2.9	4.1	4.7	0.231	0.001
General health (Overall)	21.3	11.5	25.0	10.4	30.2	15.7	0.295	<0.001

*Pearson Correlation coefficient

City with an average age of 42.8 ± 14.4 years (with a median of 40 years) were investigated. The results of the present study showed that the highest percentage of patients included women. In Bagust *et al.*'s study,[12] women consisted of the highest percentage of the researched units. The researchers think that may be due to the overcrowding of the clinic and the wasted time of the patients for the doctor's examination; men visited less due to their busy work and lack of time, but women, who were mostly housewives, had more regular visits. In this study, there was no significant difference between the QoL score between men and women ($P = 0.140$). But in the study of AbuAlhommos in 2022[6] and Monjamed,[13] there was a significant difference between men and women with diabetes in terms of QoL, especially self-care. The difference between the results of our study and the results of AbuAlhommos regarding the QoL between men and women with diabetes may be the result of the difference in social culture, and the difference in women's participation in social affairs in Iran and other countries can be another reason. Also, in our study, a negative and significant correlation was seen between age and QoL of patients ($P < 0.001$), which was consistent with the results of Monjamed's study.[13] In other words, with increasing age in diabetic patients, the QoL decreases. According to the researcher, since most of the diabetic patients are elderly and elderly-specific problems have lower scores in the QoL,[14] it is suggested that research should investigate the QoL of elderly diabetic patients. Marital status did not affect the QoL score. However, in the study of Haririan *et al.*,[15] a significant relationship between the marital status and QoL of patients was observed. In general, in explaining this finding, it can be acknowledged that diabetes, like other chronic diseases, in addition to high mortality, brings many personal, family, social, and financial problems. Since this disease involves most of the body's organs, such as the heart, eyes, stomach, and so on, it has significant and inverse effects on all aspects of the patient's QoL. The mean ± standard deviation of the general health score in diabetic patients of Semnan City was equal to 25.1 ± 13.4, and there was no significant difference between male and female patients. A direct and significant correlation between age and general health score and sub-scales was observed, but the general health score had no significant difference between the two genders. The total score of general health and the score of its sub-scales in patients under oral treatment were significantly lower than those in patients under oral and insulin treatment. A direct and significant correlation between the duration of the disease and the total score of general health and its sub-scales was observed. In the linear regression analysis, only the duration of the disease had a significant relationship with the general health score, and with the increase of each year, the duration of the disease added 0.54 to the general health score. The QoL in chronic diseases, including diabetes, has been investigated in several studies. Mehrabizadeh *et al.* (2013)[16] in their study of type 1 and 2 diabetic patients and non-diabetic people observed a significant difference in terms of QoL and mental health between the three groups so that diabetes had affected the QoL and health of the patients. In terms of QoL, our study has shown contrary results to this study, so the majority of patients in our study had a high QoL score, although this score decreased with increasing age. Of course, in terms of general health, the scores of the patients were low, which was in line with the results of Mehrabizadeh *et al.*'s study. The QoL score in our studied patients was at a high level, unlike other studies, and on the other hand, the mental health score was low in our study, which is also contrary to the study of Monjamed *et al.*[13] Also, the presence of chronic complications in diabetic patients can affect the QoL. In the study of Pham *et al.*,[17] a significant decrease in physical function, social function, emotional role, and MCS was observed in patients with diabetic heart disease compared to people without diabetes complications. But in our study, it has included patients with diabetes regardless of the severity of the disease and the presence of complications, which can be expected by considering that patients with more complications usually pay more attention to their health and are more concerned by family members, and as a result, they had a higher score of general health. One of the effects of chronic diseases is the impact on general health and mental health. The patients in our study had a relatively low general health score (1.25 out of 84), and this score was not related to the gender of the patients. In the examination of the sub-scales, the lowest score belonged to the depression sub-scale, which is the result of some chronic diseases. In Mirzaei *et al.*'s study,[18] like our study, a significant relationship between diabetes diseases and depression, anxiety, and stress has been observed. This study has reported the highest amount of depression in women and single people, which is contrary to the findings of our study. In our study, the depression sub-scale was not related to the marital status and gender of the patients, but it showed a significant relationship with the age and duration of the disease. In our studied patients, there was a relationship between the sub-scales of general and mental health with the duration of the disease, although the type of treatment and gender had no relationship with the general health score and its sub-scales. However, in the study of Neamat Pour *et al.*,[19] the prevalence of high depression in diabetes mellitus patients was reported. In this study, 40% of the sample population had mental problems and the main complaints included depression equal to 0.82, obsession and compulsion equal to 0.78, and physical complaints and anxiety equal to 0.67. There was a significant relationship between mental problems and the duration of diabetes. According to the relatively high prevalence of depression in diabetic patients, managing this disease and reducing its severity in diabetic patients with appropriate treatment methods have particular importance. In other words, it has been shown that group stress reduction training based on mindfulness, depression, anxiety, stress, and self-confidence can reduce the severity of anxiety and stress and increase self-confidence.[20] In general, diabetes complications affect various aspects of the QoL, including psychological, physical, social, economic, family, and sexual functions. The primary goal of treatment, especially in diabetic patients, is to improve the QoL by reducing the effects of the disease, and the patients should not necessarily have a low QoL. Health workers can affect the QoL of patients by examining people's health and providing it so that by improving their health status, their QoL will also improve.

Conclusion

The findings of our study showed that the duration of diabetes affects the QoL and general health of diabetic patients. Discomfort, depression, and anxiety are the main problems that affect the QoL of diabetic patients. Future studies are recommended to investigate the effectiveness of patient-tailored interventions to reduce the negative impact of these dimensions on patients' QoL.

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Conflicts of interest

There are no conflicts of interest.

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