Study of Quality of Life in Type 2 Diabetic Patients and Search for Determining Factors

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ABSTRACT:

Introduction: Type 2 diabetes is a chronic disease that usually affects adults, although increasingly children and adolescents are also affected. People suffering from diabetes face many obstacles that could have a negative impact on their quality of life (QOL). The aim of this work is to evaluate the quality of life and search for the determining factors.

Objectives: To evaluate the quality of life and identify the determining factors in patients with type 2 diabetes.

Methods: This study recruited 123 type 2 diabetic patients consulting at the military hospital. The QOL assessment was carried out using the SF-12 measurement scale in its Arabic version in Moroccan dialect.

Results: The results obtained show that the average age was 53.33 years. The average scores of the two components PCS and MCS are 46.89 ± 0.56 and 46.69 ± 0.37 respectively. The prevalence of diabetic subjects showing physical and psychological/social limitations is 10.6%. A strong correlation associates PCS and MCS ($r=0.895$; $p<0.000$). The factors that showed a significant effect on QOL are Sex ($p<0.01$), level of education ($p<0.001$), hypertension comorbidity ($p<0.048$), Age ($p<0.000$), Marital status ($p<0.05$) and age of diabetes ($p<0.039$).

Conclusions: Type 2 diabetes requires better monitoring to ensure good QOL. And this is achieved through regular physical activity and monitoring of your mental state.

1. Introduction

Diabetes is a chronic metabolic disease characterized by persistent hyperglycemia [1]. There are two main types of diabetes: type 1 and type 2. Type 1 diabetes occurs when the pancreas stops producing insulin, while type 2 diabetes occurs when the body becomes resistant to insulin. insulin or insufficient production. Diabetes has a global prevalence rate of 6.1%, placing it among the top ten causes of death and disability internationally. The highest prevalence rate is observed in North Africa and the Middle East (9.3%), and it is expected to reach 16.8% by 2050 [2]. Approximately 5% of all diabetes is type 1, 90% is type 2, and 5% is other sub-types [3].

In Morocco, diabetes represents a major public health problem, affecting the quality of life of diabetic patients [4]. Factors associated with the quality of life of

Moroccan type 2 diabetic patients include sociodemographic characteristics, comorbidities, obesity and chronic degenerative complications [5]. Diabetes has a notable effect on the quality of life of individuals. It is recognized as a long-term condition that impacts different aspects of quality of life, including physical, psychological, social and environmental [6]. In addition, diabetes-related suffering is also linked to a reduction in quality of life in individuals suffering from type2 diabetes [7] [8]. Nowadays, diabetes directly or indirectly affects the mental health and social relationships of people with diabetes. This requires special concern for the quality of life of these patients and ensuring their well-being throughout their treatment. The objective of our work consists of studying the epidemiological profile and determining the

psychosocial factors that affect the quality of life of patients with type 2 diabetes visiting the military hospital in Rabat Morocco.

2. Objectives

The main objective of this study is to evaluate the quality of life of patients with type 2 diabetes and identify the determining factors that influence it. More specifically, it aims to measure the health-related quality of life (HRQOL) of these patients using the generic SF-12 scale, examining the physical (PCS score) and mental/social (MCS score) components, as well as determining the prevalence of physical and psychological/social limitations. The study also seeks to assess the relationship between PCS and MCS scores in type 2 diabetics, and to identify the sociodemographic factors (age, sex, education level, marital status) and clinical factors (duration of diabetes, comorbidities such as hypertension) that significantly influence HRQOL. By providing valuable information on the areas of life most impacted, it will help improve the overall management of these patients and guide the necessary medical and psychosocial interventions to better support this population facing many challenges in terms of quality of life.

3. Methods

3.1. Patients and study area

The study we conducted was prospective, descriptive, and observational in nature, involving 124 Moroccan patients with type 2 diabetes. These patients were seen in consultation and/or followed at the Mohamed V Military Training Department at Rabat Hospital.

3.2. Sampling tool

Data collection took place through a questionnaire composed of two parts. The first part concerned questions about patient identity and anthropometric characteristics. The second part covered the items of the SF-12 test. The SF-12 is an abbreviated version of the "Medical Outcomes Study Short-Form General Health Survey" (SF-36), comprising only 12 questions out of the original 36. The SF-12 is a generic quality of life scale that explores physical health (PCS), emotional, and social health (MCS), with higher scores indicating better quality of life.

3.2.1. BMI calculation

To assess the body mass of an adult, we used the Body Mass Index (BMI), whose formula is as follows:

BMI = Weight (in kilograms) / (Height (in meters) * Height (in meters))

The BMI categories for adults are as follows:

BMI < 18: Underweight

BMI between 18 and 25: Normal weight

BMI between 25 and 30: Overweight

BMI > 30: Obese

3.2.2. Data analysis

The data was entered into an Excel spreadsheet and, after filtration, these data were transposed onto an SPSS sheet. Qualitative characteristics are expressed as frequency, and quantitative characteristics are expressed as mean ± standard deviation. The chi-square test of independence and analysis of variance were applied at an error rate of 5%.

4. Results

4.1. Sociodemographic and anthropometric characteristics

Table (2) presents the sociodemographic and anthropometric characteristics of type 2 diabetic patients. Indeed, the sex ratio is balanced ($p<0.59$), moreover, more than 58% of diabetic patients have a level of education at middle school or high school, which highlights the importance of education in the prevention and management of diabetes. Furthermore, the vast majority of type 2 diabetic patients are married, with a proportion of 88.9%. This may indicate that the support and social network provided by marriage can play a positive role in disease management. The average age of patients is 53.33 years (min = 22 years and max = 78 years) also the average age of diagnosis of diabetes is 11.54 years, with cases diagnosed at a very young age, this highlights the importance of early detection of the disease. In other words, the vast majority of diabetic patients have a family history of type 2 diabetes, with 77.2% of patients reporting having at least one family member with the disease. These results underline the role of genetic predisposition in the development of type 2 diabetes. Regarding patients' lifestyle habits, it is worrying to note that only 18.1% of patients report consuming tobacco. Tobacco consumption is a major risk factor that can worsen diabetes complications, and it is therefore important to educate patients about the importance of quitting smoking for their health. On the other hand, hypertension is the most common symptom reported by diabetic patients, with a prevalence of more than 46%. Hypertension is a common complication of diabetes, and close monitoring of blood pressure in

diabetic patients is essential to prevent cardiovascular complications.

4.2. Study of the SF-12 test

Cronbach's alpha is a measure of the reliability of a measurement scale. In our case, an alpha of 0.846 indicates high internal consistency, which suggests that the items in our scale are highly correlated with each other and indeed measure the same concept. A value above 0.7 is generally considered satisfactory. Regarding the components of our scale, physical health (PCS) and emotional and social health (MCS) have respective Cronbach alphas of 0.725 and 0.734. These values indicate good internal consistency for each of the components, although slightly lower than that of the overall scale. This may be explained by differences in how the items measure each dimension of health. The factor analysis that we carried out highlighted a very significant difference between the items of this test (Fisher= 475.22; p<0.000). Looking at the mean scores for the PCS and MCS components, we see means of 46.89 ± 0.56 and 46.69 ± 0.37 respectively. Scores vary between a minimum of 35.91 and a maximum of 59.69 for PCS, and between 41.22 and 55.90 for MCS while the overall average score is 46.79. These results indicate some variability in participants' scores for each of the components, which may be useful for identifying subgroups with different health levels.

Furthermore, the table illustrates the results of the categories following the transformation into a Z score (percentile test). It is important to note that the higher the score, the better the quality of life of the individuals assessed. However, the results of the different categories reveal that 11.4% of the subjects presented a limitation in their physical activities, such as moving, pulling, climbing stairs or performing daily tasks. This limitation can have a significant impact on their autonomy and overall well-being. On the other hand, 19% of participants reported experiencing fairly intense emotional states such as sadness, nervousness or depression. These emotional disorders can be particularly difficult to manage on a daily basis and can significantly impact the quality of life of the individuals concerned.

Analyzing the data further, it emerged that overall, 10.6% of type 2 diabetic patients reported both physical and emotional limitation. This double bind can have significant repercussions on the daily lives of these individuals, making them more vulnerable physically and psychologically. [Table 3].

4.3. Determining factors

To analyze the determining factors of the quality of life of diabetic patients in our sample, we used the Chi2 test of independence. The results obtained allow us to make several interesting observations. First of all, it is important to note that the percentage of diabetics showing poor quality of life is slightly higher among men (10.77%) than among women (10.24%). Regarding the level of study, we observe a significant difference. Indeed, the percentage of diabetics having a poor quality of life is 11.27% among patients with an average level of education, while it reaches 38.46% among those with a university level of education. This disparity suggests a potential link between the level of education and the quality of life of diabetic patients. Furthermore, it is interesting to note that one in 23 people with diabetes suffering from high blood pressure has a poor quality of life. This highlights the importance of considering comorbidities in diabetic patients when assessing their quality of life.

Regarding the age of patients, we find that 28.57% of diabetics under the age of 40 have poor quality of life. This data could indicate that the factors influencing the quality of life of diabetic patients vary according to age. On the other hand, the Chi2 test revealed no significant link between the SF-12 score, which measures quality of life, and the Body Mass Index (BMI). This lack of correlation could be explained by the fact that weight is not necessarily a limiting factor in carrying out daily activities for the diabetic patients in our sample.

5. Discussion

The work we carried out involves 117 patients with type 2 diabetes. The main objective of the study is to evaluate the quality of life of type 2 diabetic patients and to determine the factors associated with the quality of life of patients. In fact, 78.6% of these diabetic cases are overweight or obese. This trend has been generally explained by [9] that

Type 2 diabetes is strongly associated with being overweight or obese. The overall mean SF-12 score in our sample is 46.79. This result is comparable to that found by [10] with a score of 55.51 ± 18.48. In our study, it seems that marital status is considered a factor influencing the quality of life of patients with type 2 diabetes (p<0.05). According to [11], However, the age of diabetes thus represents a factor linked to quality of life (p<0.039). This result was confirmed by [12] which showed that separation or divorce was negatively linked

to quality of life. A significant association was noted between the quality of life of type 2 diabetic patients and hypertension (p<0.048). Furthermore, [13] showed that hypertension in type 2 diabetic patients is correlated with various risk factors, including age, BMI, increased urinary albumin excretion, triglycerides and family history. However, a strong correlation associates the quality of life and the age of patients in our sample (p<0.000). This result was confirmed by [14] in his study conducted in Ethiopia which showed that elderly patients with type 2 diabetes obtained lower scores in the areas of physical health, psychological health, social relationships and home environment. quality of life. In his study [15], out of 78.6% of Moroccan type 2 diabetics, 50% had this problem of hypertension. According to the study carried out by [16] on people with diabetes shows that between 35 and 50% can be considered to present significant distress linked to diabetes. Another study conducted by [17] Tunisia

highlighted an overall altered quality of life, in the areas of psychology, activities and diet among the diabetics in the study. Our results concerning physical and emotional activity are similar to the results found by [18] where the scores were on average 32.5 for physical limitation; 43.3 for psychological limitation.

6. Conclusions

Taking into consideration the results obtained in our study we were able to demonstrate that there was a significant association between the quality of life of diabetic patients participating in the study and certain sociodemographic variables such as Sex, level of study, associated diseases (hypertension), age, marital status and age of diabetes. Faced with this, and to make the lives of patients more pleasant and of better quality, it will be necessary to improve their level of health by ensuring comprehensive management while implementing programs to help the sick.

Table 1: test items   SF12

Item1	health
Item2	limitation of physical activities due to current health condition
Item3	mobility limitation due to health condition
Item4	limitations linked to physical state which can influence one's ability to carry out certain activities (3/2)
Item5	performance of activities related to physical state
Item6	limitation of activities due to physical pain
Item7	carrying out and completing activities due to emotional state
Item8	difficulty carrying out usual activities due to mental state
Item9	feeling of calm and inner peace
Item10	emotional energy (vitality)
Item11	sadness or depression
Item12	limitation of social activities due to emotional problems

Variable	Modality	Neither	%
sex	feminine	55	47,0
	male	62	53,0
Educational level	Less primary	38	32,5
	Middle/high school	68	58,1
	superior	11	9,4
Marital status	Single	13	11,1
	married	104	88,9
BMI	Underweight	1	1,1
	Normal build	18	20,2
	overweight	35	39,3

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		obese	35	39,3
Age in years		<30	6	5,1
		Between 30 and 40	17	14,5
		Between 40 and 50	21	17,9
		Between 50 and 60	37	31,6
		>60	36	30,8
Age of diabetes in years		<5	29	30,5
		Between 5 and 15	37	38,9
		Between 15 and 25	19	20,0
		>25	10	10,5
Familiar antecedent		Yes	78	77,2
		No	23	22,8
Smoking habit		Yes	21	18,1
		No	95	81,9
Alcoholism habit		No	2	1,7
		Yes	115	98,3
High blood pressure (hypertension)		Yes	23	46,9
		No	26	53,1

Table 2: Sociodemographic and anthropometric characteristics of patients

Table 3: Categories of SF-12 components

Component	Z< -1	-1<>1	>1	Meaning
PCS n **(%)**	14 (11.4%)	83 (67.5%)	26 (21.5%)	F=285 (p<0.000)***
PCS n **(%)**	15.4 (19%)	74 (60.2%)	30 (34.4%)	F=239 (p<0.000)***
TOTAL n **(%)**	13 (10.6%)	84 (68.3%)	26 (21.1%)	F=213.15 (p<0.000)***

***: very highly significant difference

Table 4: Determining factor of quality of life in type 2 diabetics in our sample.

Variable	Modality	SF-12 Categories			Total	Chi2 p-value
		Z<-1	-1<>1	>1		
Sex	**Women**	6	33	19	58	9.10* (p<0.01)
	Man	7	51	7	65	
level of study	**less primary**	0	26	13	39	19.63** (p<0.001)
	Middle/high school	8	50	13	71	
	Superior	5	8	0	13	
HT	**Yes**	1	14	8	23	5.84* (p<0.048)
	No	2	23	2	27	
Age	**<30**	2	7	0	9	34.82 (p<0.000)***
	Between 30 and 40	6	13	0	19	
	Between 40 and 50	3	19	0	22	
	Between 50 and 60	2	24	11	37	

BMI	**>60**	0	21	15	36	
	1,00	0	2	0	2	8.45
	2,00	1	16	3	20	(p<0.21)
	3,00	1	28	6	35	
	4,00	6	20	10	36	
Marital status	**Bachelor**	4	9	2	15	4.85
	married	9	75	24	108	(p<0.05)*
Age of diabetes	**mean±SD**	6.89±2.91	10.69±1.03	15.19±2.05		F=3.34* (p<0.039)

*: significant difference at 5%, **: significant difference at 1 %, * **: significant difference at 1 ‰,

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