Journal of Nursing
Revista de Enfermagem
UFPE On Line
ISSN: 1981-8963

ORIGINAL ARTICLE

CHARACTERISTICS AND QUALITY OF LIFE OF PEOPLE WITH DIABETES

CARACTERÍSTICAS E QUALIDADE DE VIDA DE PESSOAS COM DIABETES

CARACTERÍSTICAS Y CALIDAD DE VIDA DE PERSONAS CON DIABETES

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ABSTRACT

Objective: to characterize people with Diabetes Mellitus, accompanied by the Family Health Strategy, according to sociodemographic and clinical variables. ***Method:*** this is a quantitative, descriptive, cross-sectional study conducted with 39 users. Two instruments were used to perform the data collection. Results were presented in the form of tables. ***Results:*** it is described that 71.8% were female; 94.4% were> 40 years old; 48.7% showed income between 1-2 minimum wages; 57% were overweight / obese; 85.3% had a risk for cardiovascular complications; 56.4% reported having as diabetes time less than five years; quality of life was affected in items 13, 14, 15, 39 and Self-perception of quality of life"; there was a significant association between items 14 and 15 with diabetes time (p = 0.03 and p = 0.05, respectively) and item 15 with family income (p = 0.03). ***Conclusion:*** most of the participants had low educational level, poor economic conditions, risk factors for cardiovascular diseases and associated comorbidities. The quality of life was affected, mainly in Dimension 2. ***Descriptors:*** Diabetes Mellitus; Quality of life; Self-care; Nursing; Nursing Care; Primary Health Care.

RESUMO

***Objetivo*:** caracterizar as pessoas com Diabetes Mellitus, acompanhadas na Estratégia Saúde da Família, segundo as variáveis sociodemográficas e clínicas. ***Método*:** trata-se de estudo quantitativo, descritivo, transversal, com 39 usuários. Empregaram-se, para a coleta de dados, dois instrumentos. Apresentaram-se os resultados em forma de tabelas. ***Resultados*:** descreve-se que 71,8% eram do sexo feminino; 94,4% tinham >40 anos; 48,7% revelaram como renda entre 1-2 salários mínimos; 57% apresentaram sobrepeso/obesidade; 85,3% tinham risco para complicações cardiovasculares; 56,4% referiram ter, como tempo de diabetes, menos de cinco anos; a qualidade de vida foi afetada nos itens 13, 14, 15, 39 e Autopercepção da qualidade de vida"; houve associação significativa dos itens 14 e 15 com o tempo de diabetes (p = 0,03 e p =0,05, respectivamente) e do item 15 com a renda familiar (p = 0,03). ***Conclusão*:** destaca-se que a maioria dos participantes possui baixa escolaridade, condições econômicas precárias, fatores de risco para doenças cardiovasculares e comorbidades associadas. Apresentou-se a qualidade de vida afetada, principalmente, na Dimensão 2. ***Descritores*:** Diabetes Mellitus; Qualidade de Vida; Autocuidado; Enfermagem; Cuidado de Enfermagem; Atenção Primária à Saúde.

RESUMEN

Objetivo: caracterizar a las personas con Diabetes Mellitus, acompañadas en la Estrategia Salud de la Familia (ESF), según las variables sociodemográficas y clínicas. ***Método:*** se trata de estudio cuantitativo, descriptivo, transversal, realizado con 39 usuarios. Se utilizaron para la realización de la recolección de datos, dos instrumentos. Se presentaron los resultados en forma de tablas. ***Resultados:*** se describe que 71,8% eran del sexo femenino; 94,4% tenían> 40 años; 48,7% revelaron como ingresos entre 1-2 salarios mínimos; El 57% presentó sobrepeso / obesidad; El 85,3% tenía riesgo para complicaciones cardiovasculares; El 56,4% mencionó tener, como tiempo de diabetes, menos de cinco años; la calidad de vida fue afectada en los ítems 13, 14, 15, 39 y Autopercepción de la calidad de vida"; se observó una asociación significativa de los ítems 14 y 15 con el tiempo de diabetes (p = 0,03 y p = 0,05, respectivamente) y del ítem 15 con la renta familiar (p = 0,03). ***Conclusión:*** se destaca que la mayoría de los participantes tienen baja escolaridad, condiciones económicas precarias, factores de riesgo para enfermedades cardiovasculares y comorbilidades asociadas. Se presentó la calidad de vida afectada, principalmente, en la Dimensión 2. ***Descritores*:** Diabetes Mellitus; Calidad de Vida; Autocuidado; Enfermería; Atención de Enfermería; Atención Primaria de Salud.

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INTRODUCTION

Non-communicable chronic diseases (NCDs) are an important part of the health services' concern about the population. Among the chronic health conditions, Diabetes Mellitus (DM) stands out because it is considered one of the most frequent causes of early morbidity and mortality, loss of quality of life and negative social and economic impacts on the structure of society and the system of the country.[1]

DM is currently considered a public health problem due to its high incidence and prevalence rates and, among the countries of South America and Central America, Brazil has the highest number of people with Diabetes Mellitus (14.3 million), and the number of people diagnosed with DM globally in 2015 was 415 million. It is estimated that in 2040 there will be 642 million people diagnosed with DM worldwide, one in ten adults.[2]

Quality of life, although a subjective term, is defined as "the individual's perception of his position in life in the context of the culture and value system in which they live and in relation to his goals, expectations, standards and concerns".[3] DM, along with the complications of disease progression, are negatively affected by patients' quality of life (QoL). It is understood that the difficulty of integrating habits of life that contribute to the maintenance of the normality of glycemic levels, such as dietary patterns, physical activities and continuous follow-up by health professionals, disrupt treatment and affect the daily life of patients, and these negative repercussions influence and impact the biopsychosocial functioning of the individual, compromising QoL in the physical, social and psychoemotional domains.[4]

The subject is addressed in research that has shown that people with DM have decreased levels of QoL when compared to individuals who are not diagnosed with the disease. QoL can be influenced by some variables: diabetes type, insulin use, age range, chronic complications from the disease, social, economic and educational level, level of care received, knowledge about pathology, among others.[5]

Due to the difficulties to incorporate changes in life habits, biopsychosocial repercussions can be triggered, which are manifested in the daily life of the person with DM. It is recognized that diabetes is a disease that, regardless of age and etiology, causes a negative impact that impairs the quality of life, and the evaluation of the quality of life of individuals with chronic conditions has been the object of health research, being considered an important indicator of the therapeutic results in different clinical situations. It is possible, through the evaluation of mechanisms that negatively affect health-related quality of life, the planning of psychosocial interventions that lead to greater well-being.[4]

In view of the foregoing, it is understood that the study of sociodemographic, clinical characteristics and aspects of life affected by Diabetes Mellitus, through the evaluation of QoL, allows obtaining the necessary knowledge about the negative impact suffered in the lives of people with DM . In addition, this evaluation provides the creation of new strategies that will improve the treatment of patients, considering the biopsychosocial aspects that are related to the daily control of the disease.

OBJECTIVES

- To characterize people with Diabetes Mellitus, accompanied by the Family Health Strategy, according to sociodemographic and clinical variables
- To evaluate the quality of life of people with Diabetes Mellitus, accompanied by the Family Health Strategy.

METHOD

This is a quantitative, descriptive, cross-sectional study carried out at Family Health Units (FHU), District Health III, located in the city of João Pessoa - PB. It is known that the Family Health Units are the gateway of the users to the network of services offered by the Unified Health System (UHS), which are formed by health teams that have the function of performing prevention, promotion and recovery of health.[1]

In the municipality of João Pessoa, there are a total of five Sanitary Districts, III being the largest one, which is why it was selected. The study population was formed by users diagnosed with Diabetes Mellitus types I and II, aged 18 years and older, from the Health Units of District III of the city of João Pessoa, for the year 2014, which totals 50 USF's, involving 4,432 people.[6]

The 95% significance level was used to calculate the sample size, and the sample error was 5%, represented by the difference between the sample result and the true population result, and the prevalence in Brazil, of Diabetes Mellitus used was 6.9%.[7]

Random sampling by clusters was used. It is explained that, in this type of sampling, the subpopulations that, in this case, are

represented by the health units, have internally heterogeneous elements, called clusters.

The sample size n was calculated on the basis of the following calculations:

$$n = \frac{N \cdot p \cdot q \cdot \left(Z\frac{\alpha}{2}\right)^2}{p \cdot q \cdot \left(Z\frac{\alpha}{2}\right)^2 + (N-1)E^2} = \frac{4.432 \cdot 0{,}069 \cdot (1-0{,}069) \cdot (1{,}96)^2}{0{,}069 \cdot (1-0{,}069) \cdot (1{,}96)^2 + (4.432-1) \cdot 0{,}05^2} = 96{,}6$$

It is explained that N is the population size, p is the prevalence of diabetics, $Z\frac{\alpha}{2}$ refers to the accumulated value according to the normal distribution table, considering the level of significance of 95%, and E is the sample error. A sample of size 97 was then reached in this study.

Two stages were considered for the selection of the participants: in the first stage, the Health Units III of Health District to be included in the study were determined; already in the second stage, the number of patients to be collected from each of the selected health units was determined.

For the choice of FHUs, of the total of 50, 26 health units selected by sampling were $N_1, \ldots, N_{26}$; the number of elements selected in each health unit was represented by $n_1, \ldots, n_{26}$; each subset of the population with the same number of elements has the same chance of being included in the sample, so the proportion of each subset, that is, of each health unit, among those selected for the study:

$$p_1 = \frac{n_1}{N_1}, \ldots, p_{26} = \frac{n_{26}}{N_{26}}.$$

It is reported that in order to participate in the study, the individuals needed to present a medical diagnosis for Diabetes Mellitus and to be followed up at the District III Family Health Units. They were listed as inclusion criteria: have a medical diagnosis for Diabetes Mellitus; be over eighteen years of age; be accompanied by the Family Health Strategy and be in the Family Health Unit at the time of data collection. Pregnant women diagnosed with gestational diabetes and those without physical and cognitive abilities were excluded to answer the questionnaires.

Two instruments were used to collect data: the first one was a form with sociodemographic and clinical variables, and the second instrument used was Diabetes-39 (D-39), which is specific for quality assessment of life related to the health of people with Diabetes Mellitus, adapted version for the Brazilian population.[8] The instruments were applied through an individual interview, while the patients waited for the Nursing and / or medical consultation, in the waiting place in the units, in the morning shifts, from Monday to Friday, during the months of January to April 2016.

During the data collection, several unforeseen events occurred that caused the total sample not to be collected, initially determined in 97 individuals. It was prevented by the lack of basic materials for the consultation of the person with DM in the health units, such as the glucose meter and blood glucose check; the lack of health professionals, such as doctors and nurses, to perform individual care and precarious physical conditions of the health units, such as flooding of rooms, the care of these patients who, therefore, were not directed to the health unit or , when they appeared, did not remain due to the service rendered impossible. It was concluded, therefore, with the total of 39 individuals participating in the study.

Data was analyzed by descriptive statistics. For the analysis of the QoL of patients with DM, using instrument D-39, as it is a seven-point Likert scale, the amplitude of distribution of responses was considered and, in order to consider the "unaffected" QoL, and "heavily affected," the criterion used was: for the participants who scored the items up to the four value of the scale, the QoL was considered as "unaffected"; those who chose between values five and seven, QoL was assessed as "affected".

The chi-square test was used to verify the association between sociodemographic and clinical variables with the items of the D-39 instrument, being considered the significant association when p-value ≤ 0.05.

With respect to the ethical norms for the accomplishment of this work, Resolution N. 466/12 of the National Health Council, which prescribes the research involving human beings, with emphasis on the use of the Free and Informed Consent Term filled out by the participants and in the confidentiality and confidentiality of the data collected by the researcher.

It should be emphasized that the research project was approved by the Research Ethics Committee of the Health Sciences Center of the Federal University of Paraíba, under number 0153/12, CAEE 03459112.1.0000.5188, as well as authorized by the Municipal

Secretary of Health according to case nº 06871/2013.

RESULTS

The study was composed of 39 people diagnosed with Diabetes Mellitus, 28 (71.8%) of whom were female; 37 (94.9%) were older than 40 years; 22 (56.4%) have companions; 27 (69.2%) have primary education; 24 (61.5%) are economically active; 19 (48.7%) reported income between one and two minimum wages (Table 1).

Table 1. Distribution of people with Diabetes Mellitus according to sociodemographic characteristics. João Pessoa (PB), Brazil, 2016. (N = 39)

Variables	n	%
Sex		
Female	28	71.8
Male	11	28.2
Idade		
<40 years	2	5.1
>40 years	37	94.9
Marital status		
With companion	22	56.4
Without companions	17	43.6
Education		
Illiteracy	2	5.1
Elementary school	27	69.2
Highschool	9	23.0
Complete higher education	1	2.6
Occupation		
Active	24	61.5
Inactive	17	38.5
Family income*		
Less than 1 MW**	3	7.7
1 MW	17	43.6
Between 1 and 2 MW	19	48.7
Total	39	100

*Based on the minimum wage in force: R$ 880.00. ** MW: Minimum Wage

It was identified, in relation to the anthropometric data, that 20 (57.1%) are overweight / obese and 29 (85.3%) are at risk for cardiovascular complications (Table 2).

Table 2. Distribution of people with Diabetes Mellitus according to the anthropometric data. João Pessoa (PB), Brazil, 2016. (N = 29)

Anthropometric variables	n	%
BMI* (n = 35)		
Low weight	2	5.7
Eutrophic	13	37.1
Overweight/Obesity	20	57.1
Waist circumference (n = 34)		
No risk for cardiovascular complications	5	14.7
Presents risk for cardiovascular complications	29	85.3

*BMI: Body Mass Index

It should be noted that data were collected to calculate the BMI of 35 people, since four people did not report weight and/or height. The abdominal circumference of 34 people was also measured, since five did not allow the measurement.

It is added, in relation to the clinical characteristics of the participants, that 22 (56.4%) reported having a diagnosis of DM for less than five years; 19 (48.7%) were not smokers; however, 17 (43.6%) declared themselves to be ex-smokers; 35 (89.7%) did not use alcohol; 27 (69.2%) reported having a diagnosis of hypertension, and 21 (53.8%) presented elevated blood lipid levels (Table 3).

Table 3. Distribution of people with Diabetes Mellitus according to clinical characteristics. João Pessoa (PB), Brazil. (N = 39)

Variables	n	%
Time with DM		
<5 years	22	56.4
5 years and <10 years	7	17.9
≥10 years	10	25.6
Smoking		
Yes	3	7.7
No	19	48.7
Ex-smoker	17	43.6
Drinking		
Yes	4	10.3
No	35	89.7
Arterial hipertension		
Yes	27	69.2
No	12	30.8
Dyslipidemia		
Yes	21	53.8
No	18	46.2
Total	39	100

In evaluating the items in the D-39 questionnaire, 21 (53.9%) people with DM presented QOL affected in item 13 - Not being able to do what they want, from Dimension 1 (Energy and Mobility); in Diabetes Control (Diabetes Control), in item 14 - Having Diabetes, 15 - Losing control of sugar levels and 39 - Diabetes in general, it was verified that 31 (79.5%), 24 (61.6%) and 25 (64.1%) people with DM, respectively, had the affected QOL, and 21 (53.9%) with regard to the General Assessment reported affected QoL on self-perception (Table 4).

Table 4. Distribution of people with Diabetes Mellitus according to the answers to the five dimensions and general assessment of D-39 - Dimension 1: Energy and Mobility. João Pessoa - PB, Brazil, 2016. (N = 39).

Items	Scale			
	1 to 4		5 to 7	
	n	%	n	%
3. Decrease or lack of energy	24	61.5	15	38.5
7. Other health problems besides diabetes	22	56.4	17	43.6
9. Feeling of weakness	26	66.7	13	33.3
10. When you can walk	28	71.7	11	28.3
11. Need to exercise regularly	27	69.2	12	30.8
12. Loss or blurring of vision	25	64.1	14	35.9
13. Not being able to do what you want	18	46.15	21	53.9
16. Other diseases besides diabetes	23	59.0	16	41
25. Complications due to diabetes	24	61.5	15	38.5
29. Not being able to do housework	30	77	9	23
32. Need to rest several times in the day	28	71.7	11	28.3
33. Difficulty climbing stairs	22	56.4	17	43.6
34. Difficulties in taking care of yourself	35	89.7	4	10.3
35. Agitated sleep	26	66.7	13	33.3
36. Walking slower than others	29	74.3	10	25.7
Dimension 2: Diabetes Control				
1. Daily use of medication	31	79.4	8	20.6
4. Follow prescribed treatment	28	71.7	11	28.3
5. Dietary restrictions	22	56.4	17	43.6
14. Has diabetes	8	20.5	31	79.5
15. Losing control of sugar levels	15	38.4	24	61.6
17. Having to test sugar levels	25	64.1	14	35.9
18. Time needed for control	26	66.6	13	33.4
24. Try to keep diabetes under control	27	69.2	12	30.8
27. Keep track of sugar levels	32	82.0	7	8.0
28. Need to eat at regular intervals	25	64.1	14	35.9

31. Having an organized routine due to diabetes	29	74.3	10	25.7
39. Diabetes in general	14	35.9	25	64.1
Dimension 3: Anxiety and Concern				
2. Concern about financial issues	26	66.7	13	33.3
6. Concerns about the future	27	69.2	12	30.8
8. Stress or pressure in your life	25	64.1	14	35.9
22. Feeling sad or depressed	25	64.1	14	35.9
Dimension 4: Social Overload				
19. Restricting diabetes about family and friends	29	74.3	10	25.7
20. Embarrassment for having diabetes	30	76.9	9	23.1
26. Do things that family and friends do not do	25	64.1	14	35.9
37. Being called a diabetic	32	82.0	7	18.0
38. Having diabetes interfering in family life	28	71.9	11	28.1
Dimension 5: Sexual Functioning				
21. Diabetes interferes with sex life	27	69.2	12	30.8
23. Problems with sexual function	27	69.2	12	30.8
30. Decreased interest in sex	27	69.2	12	30.8
General Evaluation				
Self-perception of quality of life	18	46.1	21	53.9
How serious do you think your diabetes is?	24	61.5	15	38.5

It is revealed that, among the variables in which the quality of life was affected, item 14 - Having Diabetes and item 15 - Losing control of sugar levels showed a significant association with the variable Time of DM (Table 3) presenting p-value of 0.03 and 0.05, respectively; as well as item 15 - Losing control of sugar levels showed a significant association with the family income variable (Table 1), with p-value of 0.03.

DISCUSSION

The predominant percentage of female participants in the study is observed in relation to the sociodemographic data, an event that can be explained by the greater demand for health services by women, in addition to the female population being worldwide superior to the male population.[5]

It is inferred, in relation to age, that people predominate> 40 years, and this fact occurs due to the gradual increase in the frequency of DM throughout life and the association of this morbidity with the aging process.[9]

It has been raised, as far as marital status is concerned, that most of the participants have a partner. Marital status can be considered a factor contributing to the management of diabetes, since individuals who lost their partner have a greater tendency to present health changes, such as discouragement, depression and loss of will to live, which can directly interfere with the quality of life of the person with diabetes.[10]

The study participants showed low level of education or even complete illiteracy, and this negative result tends to determine the difficulty of absorbing new knowledge about DM and to cause low adherence to drug therapy, and a Brazilian study shows that most people diagnosed with DM have low educational level.[11]

It has been shown, in relation to the occupation, that the majority has paid activity, and this result can contribute positively to the quality, since studies show that people who engage in some type of paid activity have a positive effect on the aging process, in addition to financial independence in relation to important aspects such as health.[12]

It was pointed out, on the economic conditions presented by the participants, family income between one and two minimum wages, and the evaluation of this point is important for the quality of life, since a large part of retirees in Brazil support their family, which may suggest the restricted use of the monthly money for the treatment of diabetes.[12]

It was defined, in relation to the clinical characteristics of the patients, that most of the participants had a BMI equivalent to overweight/obesity, and the increase in adiposity may indicate a potential risk factor for the development of cardiovascular diseases, leading to morbidity and mortality. quality of life.[13]

Participants were at risk for cardiovascular complications. It is indicated by the high

abdominal circumference measures, risk for the development of chronic non-communicable diseases, such as cardiovascular diseases, that increase the incidence and prevalence of morbidity and mortality in patients with DM.[1]

It is worth noting that, in relation to the time of DM, individuals had, for the most part, a diagnosis time of less than five years. The time of diagnosis of the disease should be taken into account, because eventually, the longer the diagnosis, the lower the prevalence of adherence to treatment; in addition, a longer period of coexistence with the diagnosis of the disease increases the risk of development of complications related to diabetes, as a result of ineffective control of glucose metabolism.[14]

It was stated, as far as smoking is concerned, by the minority, to be a smoker, however, a considerable number reported being an ex-smoker. It contributes, due to the consumption of tobacco, to the increase of morbimortality, due to its direct influence in the development of cardiovascular diseases.[15]

Regarding alcohol consumption, 89.7% of those interviewed, alcoholic beverages were not used, and diabetic patients can consume alcoholic beverages, provided that they follow a limit of recommended doses. Dysfunctions in metabolic control and/or aggravation of diabetes-related complications are associated with dysfunction when associated with DM, if their use is chronic.[16]

It is exposed that, among the individuals interviewed, 69.2% reported a diagnosis for systemic arterial hypertension (SAH). There is a negative effect on the quality of life of the diabetic individual, due to the association between DM and SAH, due to the potentiation of clinical complications at micro and macrovascular levels, causing cardiocerebrovascular morbimortality.[16]

It was examined, for QoL items, that most participants showed that "13 - Not being able to do what they want" (Dimension 1 - Energy and Mobility) affects quality of life, and this can be a consequence of decrease of the power of the act and to think of people with DM due to complications of the pathology, besides the development of feelings of despair and distress arising from the coexistence with the limitations that the chronic condition imposes.[17]

It was found, in Dimension 2 - Diabetes Control, that participants pointed out that items 14 - Having Diabetes, 15 - Losing control of sugar levels and 39 - Diabetes in general affect quality of life, which may be related adherence to the treatment of the disease, which includes the daily use of the medication, the practice of physical activity and adherence to a healthy diet, since it requires, from the affected person, participation of up to 90% in the care to his health so that he has the control metabolic rate.[10]

Among the components of treatment, it is due to the adherence to a balanced diet, the loss of the autonomy of the person with DM in choosing the type of food, the quantity and the moment of carrying out the meals as desired. This change in the food routine is understood as involving discipline and planning, as the greater difficulty of adherence to treatment and, therefore, a factor that leads to the decompensation of the disease and the depreciation of the quality of life.[18-9]

It was evidenced in this study that people who had a shorter time of DM had an association with the quality of life affected in items 14 - Having Diabetes and 15 - Losing control of sugar levels, which corroborates a study carried out in Primary Care, in Fortaleza - CE, which showed that people with DM with better levels of quality of life are those who have been living with the disease for a longer time, because, as the time of living with the disease progresses, the person with DM gets more information on the disease, as well as better adaptation to their chronic condition, allowing them to have knowledge and positive attitudes to perform self-care activities.[18]

Another association regarding QoL affected was found in item 15 - Losing control of sugar levels with family income. The objective of this study was to investigate the factors associated with the absence of glycemic control in people with Primary Care DM, that the economic condition is a factor that may interfere with the treatment follow-up, since its cost is high, especially in relation to the diet, composed of specific foods with differentiated prices in relation to those that make up the basic food basket.[20]

As regards General Evaluation, it was found that people with DM presented Self-perception of affected quality of life, which may be related to the changes required in the lifestyle and the economic and social context in which the person with DM is inserted.[21]

In this sense, we recognize the importance of continuous quality of life assessment in people with DM, since this activity provides an analysis that refers to the individual's holistic view, contemplating aspects that are often passive of interventions of health professionals, mainly, of the nurse.[22]

It is necessary, for this evaluation to take place actively in the health services, that there is a planning and implementation of actions of responsibility involving the government itself, with the valorization of scientific information through public policies that contemplate the improvement of the quality and the appreciation of the health professionals who accompany them.[23]

The study was limited by the number of participants, as a consequence of the lack of inputs and human resources deficit, which contributed to the fact that a small number of people with DM sought the FHU during the collection period.

CONCLUSION

It was possible to identify, through the study, that the majority of the participants had low educational level, poor economic conditions, risk factors for cardiovascular diseases and associated comorbidities, as well as that the quality of life was mainly affected in Dimension 2.

It was also observed that the items in which the participants presented affected QoL had significant associations with the sociodemographic (income) and clinical variables (time of DM). It is confirmed by the results found that care for the person with DM should be holistic, considering all aspects of the person with DM and that, along with quality of life, these variables influence treatment adherence and should be considered in the care planning by the health team, since they have an impact on the morbidity and mortality of the disease.

It is considered complex to evaluate the quality of life of individuals with Diabetes Mellitus, since it is necessary to use an integrated look at the human being, and it is fundamental to understand that quality of life is a subjective term that can be influenced by the association of social, demographic, emotional, clinical and laboratory variables.

It is therefore necessary to carry out further studies on the subject, since there is a shortage of publications on the quality of life of patients with diabetes in Brazil, mainly using the D-39 instrument.

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Submission: 2018/11/11
Accepted: 2019/02/27
Publishing: 2019/05/01

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