FACTORS ASSOCIATED WITH THE QUALITY OF LIFE OF INDIVIDUALS AFFECTED BY DIABETES MELLITUS

FATORES ASSOCIADOS À QUALIDADE DE VIDA DE INDIVÍDUOS ACOMETIDOS POR DIABETES MELLITUS

FACTORES ASOCIADOS CON LA CALIDAD DE VIDA DE INDIVIDUOS AFECTADOS POR DIABETES MELLITUS

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Objective: analyze factors associated with the quality of life of individuals affected by diabetes mellitus. Method: an epidemiological, census-based study of 101 individuals diagnosed with type 2 diabetes treated at a Family Health Unit in the city of Jequié, state of Bahia, Brazil. Data collection instruments were used: sociodemographic, lifestyle, clinical data, and WHOQOL-bref. Results: It was evidenced that people who drink and smoke had a better perception of quality of life in the social relations domain. It was seen that overweight/obese individuals had a lower perception of quality of life in the psychological domain. Regarding the moment of the diagnosis, a lower perception was noted among individuals who had had a diabetes mellitus diagnosis more than 5 years earlier and in the social relations domain. Conclusion: drinking and smoking, the body mass index, and the moment when the disease was diagnosed interfere in the individual's quality of life with diabetes.

Descriptors: Diabetes mellitus. Lifestyle. Quality of life.

Objetivo: analisar os fatores associados à qualidade de vida de indivíduos acometidos por diabetes mellitus. Método: estudo epidemiológico, censitário, realizado com 101 indivíduos com o diagnóstico de diabetes tipo 2 atendidos em uma Unidade de Saúde da Família do município de Jequié-BA, Brasil. Foram utilizados os instrumentos de coleta de dados: sociodemográficos, estilo de vida, dados clínicos e o WHOQOL-bref. Resultados: evidenciou-se que as pessoas que fazem uso de álcool e tabaco apresentaram melhor percepção de qualidade de vida no domínio relações sociais. Verificou-se que os indivíduos sobrepeso/obeso apresentaram pior percepção de qualidade de vida no domínio psicológico. Quanto ao tempo diagnóstico, observou-se pior percepção entre os indivíduos com diagnóstico > 5 anos de diabetes mellitus e o domínio relações sociais. Conclusão: o consumo de álcool e tabaco, índice de massa corporal e o tempo diagnóstico da doença interferem na qualidade de vida do indivíduo com diabetes.

Descritores: Diabetes mellitus. Estilo de vida. Qualidade de vida.

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Objetivo: analizar los factores asociados con la calidad de vida de individuos afectados por diabetes mellitus. Método: estudio epidemiológico, censatario, realizado con 101 individuos con diagnóstico de diabetes tipo 2 atendidos en una Unidad de Salud de la Familia del municipio de Jequié-BA, Brasil. Fueron utilizados los instrumentos de recolección de datos: sociodemográficos, estilo de vida, datos clínicos y el WHOQOL-bref. Resultados: se evidenció que las personas que hacen uso de alcohol y tabaco presentaron mejor percepción de calidad de vida en el dominio relaciones sociales. Se verificó que los individuos con sobrepeso/obesidad presentaron peor percepción de calidad de vida en el dominio psicológico. En cuanto al tiempo diagnóstico, se observó peor percepción entre los individuos con diagnóstico >5 años de diabetes mellitus y el dominio relaciones sociales. Conclusión: el consumo de alcohol y tabaco, índice de masa corporal y el tiempo diagnóstico de la enfermedad interfieren en la calidad de vida del individuo con diabetes.

Descriptores: Diabetes Mellitus. Estilo de vida. Calidad de vida.

Introduction

Chronic non-communicable diseases (CNCDs) are very relevant in epidemiology because they are the main cause of morbidity and mortality in Brazil and in the world[1]. Among CNCDs, diabetes mellitus (DM), a disease that is multifactorial, progressive, and responsible for metabolic complications related to heart attacks and strokes, stands out. The number of individuals with DM is expected to reach 11 million in Brazil by 2030[2].

Individuals diagnosed with DM, particularly type 2, require special attention due to the disease. A lifestyle associated with obesity and systemic arterial hypertension (SAH) lead to further complications. It is noted that DM-related injuries can compromise a person's quality of life (QoL), especially those who do not have access to adequate guidance on the required care insofar as the harm that DM complications can cause is concerned.

QoL can be defined as the person's perception of his/her physical, affective, and cognitive condition through social relations and the roles one adopts in life, as well as of the various aspects related to the environment in which he/she lives[3].

Considering the impact DM-related factors have on a person's QoL, it is important to have health policies in place aimed at promotion and prevention, since this may reduce possible complications resulting from the disease. In addition, prevention work helps reduce expenses and public health service overloading, thus reducing the number of hospitalizations[4].

Therefore, improving QoL can help people with diabetes face the disease and its possible complications. In addition, the results of this study will provide information about the current state of health and QoL of these subjects and will create possibilities to assist in a better sizing of the care for DM.

Thus, the purpose of the study is to analyze factors associated with the quality of life of individuals affected by diabetes mellitus.

Method

This is a cross-sectional, census-based epidemiological study conducted between April and May 2014, with 101 individuals diagnosed with T2DM and enrolled in the Hypertension and Diabetes (Hiperdia) program of a Family Health Unit (FHU) in the city of Jequié, state of Bahia, Brazil.

The following inclusion criteria were considered: People of both sexes diagnosed with DM2, enrolled in the Hiperdia program and monitored by the health team. Six people were excluded from the study because they had a cognitive deficit that prevented them from responding to or understanding the instrument, and another four because they were not found at their homes after three visits made at alternate times. Five people did not agree to participate in the survey.

The interviews were conducted individually at the participants' homes and lasted 15 to 20 minutes. To carry the study out at this location, it was necessary to have assistance from the community health agents to get to the survey site. Thus, the contact was initiated after the researcher was introduced, which was followed by the explanation of the nature of the study.

Subsequently, after the person agreed to participate, the Free and Informed Consent Term (FICT) was presented. A questionnaire containing closed questions was used as a data collection instrument, and it consisted of three thematic

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blocks: Sociodemographic profile, lifestyle, and clinical data, in addition to the QoL survey.

The sociodemographic profile consisted of the following variables: Gender, age (in years), schooling, marital status, race/color, and monthly income. The race/color variable was self-reported and categorized as black (black and pardo) and non-black (white, yellow, and indigenous)[5].

Regarding lifestyle-related characteristics and clinical data, an evaluation was made of smoking, categorized as smoker and non-smoker (former smokers were included in the non-smoker category); drinking, categorized as current consumption and never having consumed (people who no longer drink were included in the progress category); sedentary lifestyle, defined as practicing physical activities or not, with answers distributed in yes or no, and fasting capillary glycemia, rated as G < 100 mg/dl and G ≥ 100 mg/dl[6]. The moment of diagnosis was categorized as ≤ 5 years and > 5 years.

Blood pressure (BP) was measured using a sphygmomanometer and stethoscope, both of the Premium™ brand. Cut-off points were established after the measurement: Systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg[7]. A portable scale (*Tech Line*) was used to measure body mass, and a compact stadiometer (*E210-Wiso)* to measure height (in centimeters). After these measurements were made, the body mass index (BMI) was calculated using this formula: [Weight/Height^2]. Thus, it was possible to rate individuals as eutrophic (BMI 18.5-24.9); overweight (BMI 25-29.9), and obesity (BMI ≥ 30.0)[8].

QoL was assessed based on the WHOQOL-bref tool. This tool consists of 26 questions, two of which are general and the other 24 are divided into the physical, psychological, social, and environmental domains, and the general QoL index[9]. The tool evaluates both healthy populations and populations affected by illnesses and chronic diseases.

After the instruments were applied, the data were tabulated in a spreadsheet using the *Statistical Package for the Social Sciences* (SPSS) software, release 21.0 (IBM Corp., Armonk, United States). A descriptive analysis (relative and absolute frequency) was made for category variables and the median and interquartile range determined for the continuous variables. Data normality was analyzed using the *Kolmogorov-Smirnov* normality test. The *Mann-Whitney/Wilcoxon* test was applied to compare proportions among the QoL domains using the lifestyle and clinical data of the subjects with DM. The significance level used was p-value ≤ 0.05.

This study complied with the ethical and legal norms set forth by Resolution 466/2012, and was approved by the Research Ethics Committee (REC) of the Southwest Bahia State University under Protocol No. 135/2008.

Results

Among the 101 subjects with DM who were studied, 55.4% were females. The median age was 59 years (QI 52-70.5), with 52.5% in the age group equal to or greater than 60 years. It was evidenced that 75.2% had an educational level below or equal to 8 years of schooling; 52.5% were married or had a consensual union; 78.2% self-declared being blacks, and 51.5% had a monthly income of one minimum wage (Table 1).

Table 1 - Sociodemographic and labor characteristics of individuals with DM2. Jequié, Bahia, Brazil, 2014 (n = 101)

Variable	n	%
Gender		
Male	45	44.6
Female	56	55.4
Age group		
< 60 years	48	47.5
≥ 60 years	53	52.5
Schooling		
≤ 8 years	76	75.2
> 8 years	25	24.8
Marital status		
With partner	53	52.5
Without partner	48	47.5
Race/Skin Color		
Black	79	78.2
Non-black	22	21.8
Monthly income		
1 minimum wage	52	51.5
> 1 minimum wage	49	48.5

Source: Developed by the Authors.

Smoking was identified among 52.5 percent of the individuals, while drinking among 64.4 percent of the studied population. It was noted that 61.4 percent of the individuals with DM were sedentary, and 67.3 percent were rated as overweight/obese. It was also noted that 82.2 percent had fasting capillary glycemia ≥ 100 mg/dl. Regarding BP, 86.1 percent had alterations. In addition, it was evidenced that 70.5 percent had been diagnosed with DM more than 5 years earlier (Table 2).

Considering the QoL dimensions of the investigated population, among the individuals with DM, the domain with the highest median was social relations, 75.0 (58.3–75.0), while the lowest median was seen in the environmental domain, 53.1 (46.8–62.5) (Table 3).

Table 2 - Lifestyle characteristics and clinical data of the individuals affected by DM2. Jequié, Bahia, Brazil, 2014 (n = 101)

Variable	n	%
Smoking		
Current/former smoker	53	52.5
Never	48	47.5
Drinking		
Current/past	65	64.4
Never	36	35.6
Sedentary lifestyle		
Yes	62	61.4
No	39	38.6
BWI		
Eutrophic	33	32.7
Overweight/obese	78	67.3
Fasting glycemia		
< 100	18	17.8
≥ 100	83	82.2
BP		
Not high	14	13.9
High	87	86.1
Disease diagnosis moment		
≤ 5 years	30	29.7
> 5 years	71	70.3

Source: Developed by the Authors.

Table 4 shows the QoL data domains, considering the smoking and drinking variable. There was a better perception of QoL, with a statistically significant difference, in social relations among smokers (p = 0.035) and drinkers (p = 0.024).

The relationship between the QoL domains and the clinical data appear in Table 5. There was a worse perception of QoL between overweight/obese individuals and the psychological domain, with a statistically significant difference (p = 0.028). With regard to the moment of diagnosis, a lower QoL perception was noted among individuals who had been diagnosed with DM more than 5 years before and the social relations domain, and there was a statistically significant difference (p = 0.015).

Discussion

Based on the characterization of the individuals participating in the study, there were different proportions of men and women with DM, which corroborates the studies carried out on the prevalence of the adult population with DM and its associated factors, as well as the results seen concerning the prevalence of DM among the elderly in São Paulo, in which women were the majority[10,11]. Relatively low schooling levels and monthly incomes were also evidenced in the study. It is known that a population's sociodemographic characterization is essential for activities related to health promotion and prevention, as well as for controlling DM[12].

Table 3 – Median and interquartile range (IQR) of the quality of life domains of the individuals affected by DM2. Jequié, Bahia, Brazil, 2014 (n=101)

QoL domains	Median	IQ
Physical	57.1	(46.4–67.8)
Psychological	70.8	(58.3–79.1)
Social relations	75.0	(58.3–75.0)
Environment	53.1	(46.8–62.5)
GQLI	62.5	(50.0–75.0)

Source: Developed by the Authors.

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Table 4 – Comparison of the quality of life domains with the lifestyle data of the individuals affected by DM2. Jequié, Bahia, Brazil, 2014 (n = 101)

QoL domains	Smoking	Median/QI	p-value	Drinking	Median/QI	p-value
Physical	Current	57.1 (46.4–57.8)	0.747	Current	57.1 (50.0–67.8)	0.731
	Never	57.1 (50.0–67.8)		Never	57.1 (42.8–67.8)	
Psychological	Current	70.8 (62.5–79.1)	0.285	Current	70.8 (63.5–79.1)	0.135
	Never	66.6 (58.3–79.1)		Never	66.6 (54.1–75.0)	
Social relations	Current	75.0 (58.3–75.0)	0.035*	Current	75.0 (66.6–83.3)	0.024*
	Never	70.8 (58.3–79.1)		Never	70.8 (58.3–75.0)	
Environment	Current	53.1 (46.8–59.3)	0.914	Current	53.1 (46.8–62.5)	0.129
	Never	53.1 (46.8–62.5)		Never	50.0 (46.8–56.2)	
GQLI	Current	62.5 (50.0–75.0)	0.281	Current	62.5 (50.0–75.0)	0.416
	Never	62.5 (50.0-62.5)		Never	62.5 (50.0–62.5)	

* Statistically significant difference (p-value ≤ 0.05).

Source: Developed by the Authors.

Table 5 – Comparison of the quality of life domains with the BMI and the moment of diagnosis of the individuals affected by DM2. Jequié, Bahia, Brazil, 2014 (n = 101)

QoL domains	BWI	Median IQ	p-value	Moment of diagnosis	Median IQ	p-value
Physical	Eutrophic	60.7 (50.0–71.4)	0.336	≤ 5 years	60.7 (50.0–71.4)	0.140
	Overweight/obese	57.1 (46.4–64.2)		> 5 years	57.1 (42.8–64.2)	
Psychological	Eutrophic	75.0 (62.5–83.2)	0.028*	≤ 5 years	66.6 (58.3–75.0)	0.496
	Overweight/obese	66.6 (58.3–75.0)		> 5 years	70.8 (66.6–83.3)	
Social relations	Eutrophic	75.0 (58.3–83.3)	0.346	≤ 5 years	75.0 (58.3–75.0)	0.015*
	Overweight/obese	75.0 (58.3–75.0)		> 5 years	70.8 (58.3–75.0)	
Environment	Eutrophic	56.2 (48.4–65.6)	0.087	≤ 5 years	53.1 (50.0–62.5)	0.379
	Overweight/obese	53.1 (46.8–59.3)		> 5 years	51.5 (46.8–61.7)	
GQLI	Eutrophic	62.5 (50.0–75.0)	0.258	≤ 5 years	62.5 (50.0–75.0)	0.623
	Overweight/obese	62.5 (50.0–75.0)		> 5 years	62.5 (50.0–75.0)	

* Statistically significant difference (p-value ≤ 0.05).

Source: Developed by the Authors.

Regarding the age group, most of the individuals in the study are 60 or more years old. The study of DM in other countries, such as Mexico and Uruguay, evidenced a 22.0 percent and 13.3 percent prevalence, respectively, of the elderly population with the disease, which shows the increasing number of people with this morbidity[13]. Moreover, with advancing age, the chances of individuals developing complications due to the illness increase[14]. It can be inferred that the complications brought about by DM influence the individual's QoL and favor the appearance of physical limitations, psychological issues, and the need to search for better health conditions.

As to the studied population's lifestyle, most individuals smoke and drink. It is noteworthy that smoking is one of the main risk factors for CNCD complications. The World Health Organization (WHO) has reported that smoking kills about six million people per year. Thus, policies have been developed to reduce smoking[15]. Drinking, meanwhile, accounts for 2.3 million deaths. Alcohol is considered a toxic substance that may contribute to the worsening of DM and other CNCDs[8].

In addition, it was noted in the study that individuals with DM are considered sedentary, overweight/obese and have altered BP levels. These results corroborate the findings evidenced in investigative studies on DM monitoring, and an overweight population with a history of increased BP levels prevails[16,17]. It is noted that a sedentary lifestyle, without physical activity and associated to drinking and smoking, favors the development of CNCDs[17].

In general, modifiable factors for CNCDs, including a sedentary lifestyle and obesity, have a negative influence on the QoL of individuals with DM. In addition, attention should be paid to changes in the population's lifestyle with regard to regular physical activity practices, food control, and cessation of smoking[17]. Thus, these changes may contribute to a better perception of QoL, with improved health and emotional aspects for the individual. It is important for health professionals working in the service to encourage activities that promote health to drive

behavioral changes in the life of the person with DM, and, thus, avoid possible complications[18].

Regarding the moment of diagnosis, most of the population had been living with the disease for more than 5 years. An early diagnosis favors a better treatment and affords improvements in the QoL. People with DM can live with the disease and avoid possible complications if they follow the health professionals' recommendations. However, when the condition is diagnosed late or when the person lives with the disease but is unaware of it, the chances of complications increase, since the lack of insulin or the insulin's inability to adequately exert its effects drive a change in the person's metabolism, leading to hyperglycemia, among other alterations[19].

Considering a few important conditions related to this population's lifestyle, it was noted that individuals with DM had a better perception of QoL in the social relations domain with smoking and drinking. This is justified by the fact that drinking and smoking give the person a feeling of relaxation regarding their daily activities[20]. In addition, it is also observed that friendships and social interactions, in general, can influence QoL positively. On the other hand, although this lifestyle is harmful to health, it is noticed that by having these habits, these people have a form of contact and interaction with other people. It is worth pointing out that these substances' harmful effects, either for those who use them or for those who have already done so, are risk factors for DM complications[17].

Also standing out were the results relative to QoL with BMI and the moment of diagnosis of DM. Although there was a positive association between social relations and lifestyle, it was observed in the study that there was a lower perception of QoL between the psychological domain with overweight/obese people, and the moment of diagnosis of ≤ 5 years living with the disease. It is noted that these findings show that overweight people are not satisfied with their looks and body image, given that they are limited in performing certain activities because of being overweight which, in a way, influences in their self-esteem and psychology, triggering

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a series of psychosomatic symptoms. It is considered that the limitations imposed by the excess weight associated with the disease influence QoL negatively, besides being a factor that can trigger cardiovascular complications[21].

Regarding the moment of diagnosis, one can infer the impact caused by the revelation of the disease, in which such person is affected by DM. Thus, initially dealing with the disease demonstrates the individual's difficulty to adapt to the change in lifestyle, since he or she does not accept that he or she has a disease that needs treatment[22]. It is worth adding that this person will start getting guidance about changes in eating habits, making use of medications routinely, and be monitored by a health professional. In other words, the impact generated by the change in daily life implies deterioration in the person's emotional life, thus influencing the QoL perception[22,23]. Thus, having family support and being monitored by health professionals can contribute to better adherence to treatment and lead to a better QoL[24].

In this sense, monitoring the family member in the stage of adherence to the treatment and having the follow-up of the health professional is paramount, and these are the pillars that will support the individual to adhere to the new imposed conditions related to the DM diagnosis.

The limitations imposed when conducting cross-sectional studies should be kept in mind, since they do not allow one to attribute the cause of the associations evidenced because they portray an epidemiological situation at a specific moment of the person's health. Another study limitation was the impossibility of making an evaluation of the influence of the class of DM hypoglycemic drugs on the QoL, and more information needs to be collected to subsidize new studies.

Conclusion

It was concluded that elderly people with DM who have a low level of schooling and survive on a monthly income of one minimum wage prevailed. These factors may contribute to the fact that the surveyed population has more difficulty in controlling DM, and this may negatively influence QoL. In addition, individuals were found to have a life-threatening lifestyle, mainly due to drinking and smoking. Another fact that stood out was the prevalence of an overweight, sedentary population with altered BP and blood glucose levels.

In contrast to the essential conditions to avoid complications related to DM, it was shown that individuals who drink and smoke have a better perception of QoL in the social relations domain. Although these substances are considered risk factors and complications for CNCD, they do not negatively impact social relations. This justifies the possible influence friendships or a lack of family support regarding education on the harm that drinking and smoking may have on the individual with DM.

However, although lifestyle does not negatively influence the QoL of the person with DM, it is noted that the clinical data related to being overweight and the recent diagnosis of the disease had a negative impact on QoL in the psychological domain. Thus, it was noted that these individuals' self-esteem may be shaken due to their being deprived of carrying out daily activities due to excess weight. In addition, the impact of getting the DM diagnosis also influences the individual, making it more difficult to adapt to the disease.

Collaboration:

1. design, project, analysis and interpretation of data: Bruno Gonçalves de Oliveira, Eliane dos Santos Bomfim.

2. article writing and critical review of intellectual content: Bruno Gonçalves de Oliveira, Eliane dos Santos Bomfim, Icaro José Santos Ribeiro, Erica Assunção Carmo.

3. final approval of the version to be published: Bruno Gonçalves de Oliveira, Eliane dos Santos Bomfim, Icaro José Santos Ribeiro, Erica Assunção Carmo, Rita Narriman Silva de Oliveira Boery, Eduardo Nagib Boery.

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