Research

HEALTH-RELATED QUALITY OF LIFE OF PEOPLE WITH DIABETES *MELLITUS*

QUALIDADE DE VIDA RELACIONADA À SAÚDE DE PESSOAS COM DIABETES MELLITUS

CALIDAD DE VIDA RELACIONADA A LA SALUD DE PERSONAS CON DIABETES MELLITUS

Thais Oliveira Santos Alves [1]
Sônia Alves de Souza [2]
Elze Cecília Santos Souza [2]
Cristiane Franca Lisboa Gois [3]
Alzira Maria Dávila Nery Guimarães [4]
Maria Cláudia Tavares de Mattos [4]

[1] RN. Aracaju, SE – Brazil.
[2] Undergraduate student in Nursing, Universidade Federal de Sergipe – UFS. Aracaju, SE – Brazil.
[3] RN. Adjunct Professor in the Department of Nursing – UFS. Aracaju, SE – Brazil.
[4] RN. Adjunct Professor in the Department of Nursing – UFS. Aracaju, SE – Brazil.

Corresponding Author: Cristiane Franca Lisboa Gois. E-mail:cristianeflg@hotmail.com
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ABSTRACT

Diabetes mellitus is a highly prevalent disease that is linked to high rates of morbidity and mortality. The present study aimed to evaluate the health-related quality of life (HRQoL) of people with diabetes mellitus and its relation to gender, age, time spent since the diagnosis of diabetes, and the practice of physical activity. This is a cross-sectional descriptive study that evaluates HRQoL based on the SF-36 questionnaire. Among the 170 participants, 74.1% were female, 52.9% were married, and the average (standard deviation) of age and time since the diagnosis of the illness were 61.8 years (11.3) and 15.9 years (7.9), respectively. The SF-36 component averages ranged from 46.2 (physical functioning) to 84.8 (social functioning). Men presented a better HRQoL assessment. The practice of physical activity was associated with a better HRQoL. No association among HRQoL, age, marital status, and years with diabetes could be observed. It can therefore be concluded that this study's participants presented a greater loss in the components that assess physical health.
Keywords: Quality of Life; Diabetes *Mellitus*; Nursing Care; Chronic Disease.

RESUMO

O diabetes mellitus é uma doença que apresenta alta prevalência e está relacionado às elevadas taxas de morbimortalidade. Com este estudo, objetivou-se avaliar a qualidade de vida relacionada à saúde (QVRS) de pessoas com diabetes mellitus e sua relação com sexo, idade, tempo de diagnóstico do diabetes e prática de atividade física. Trata-se de estudo descritivo, tipo transversal, no qual foi utilizado o SF-36 para avaliar a QVRS. Dentre os 170 participantes, 74,1% eram mulheres, 52,9% casados e as médias (desvio-padrão) da idade e do tempo de diagnóstico da doença foram, respectivamente, 61.8 anos (11.3) e 15.9 anos (7.9). As médias entre os componentes do SF-36 variaram de 46.2 (Capacidade funcional) a 84.8 (Aspectos sociais). Os homens apresentaram melhor avaliação da QVRS. A prática de atividade física se associou à melhor QVRS. Não se constatou associação entre QVRS, idade, estado civil e anos de diabetes. Concluiu-se que os participantes do estudo apresentaram maior comprometimento nos componentes que avaliam a saúde física.
Palavras-chave: Qualidade de Vida; Diabetes Mellitus; Cuidados de Enfermagem; Doença Crônica.

RESUMEN

La diabetes mellitus es una enfermedad muy frecuente y está asociada a altas tasas de morbilidad y mortalidad. El objetivo del estudio fue evaluar la calidad de vida relacionada con la salud (CVRS) de personas con diabetes mellitus y su relación con género, edad, momento de diagnóstico de la diabetes y práctica de actividad física. Es un estudio descriptivo transversal que utilizó el cuestionario SF-36 para evaluar la CVRS. Entre los 170 participantes, 74,1% eran mujeres, 52,9% casados, y las medias (desviación estándar) de edad y tiempo de diagnóstico de la enfermedad fueron respectivamente 61.8 años (11,3) y 15.9 años (7,9). El promedio de los componentes del cuestionario SF-36 osciló entre 46,2 (capacidad funcional) y 84,8 (aspectos sociales). Los hombres mostraron mejor evaluación de la CVRS. La práctica de actividad física fue asociada a mejor CV. No hubo asociación entre la CVRS, edad, estado civil y años de diabetes. Llegamos a la conclusión de que en los participantes del estudio hubo peor desempeño de componentes que evalúan la salud física.
Palabras clave: Calidad de Vida; Diabetes Mellitus; Atención de Enfermería; Enfermedad Crónica.

INTRODUCTION

Diabetes Mellitus (DM) is a "non-transmissible chronic disease" (NTCD) which presents a growing prevalence curve. Estimates indicate that in 2000, DM affected 2.8% of the world population, with an outlook that is expected to rise to 4.4% in 2030. Within the same period, approximately 4.6 million people suffered from diabetes in Brazil, a number that is expected to rise to 11.3 million.[1]

In addition to its prevalence, DM also presents high morbidity and mortality rates, especially among the elderly population, which is related to a wide range of other NTCD's which place the lives of people with DM at risk.[2]

Chronic illnesses frequently impact the multiple dimensions of health related quality of life (HRQoL).[3] In the case of DM, in addition to the complications related to this illness, the episodes and the fear of hypoglycemia, the changes in lifestyle, and the fear of long-term consequences can reduce the HRQoL of people with DM.[4]

HRQoL is a term that has been commonly used when focusing on the quality of life aspects influenced by the illness and/or treatment.[5] The HRQoL assessment of individuals with chronic illnesses has been the object of investigation in the field of health and is considered an important indicator of therapeutic results in a variety of clinical situations. The assessment of mechanisms that produce a negative impact on HRQoL make it possible to plan psychosocial interventions that lead to well-being.[6]

Among the tools used for the HRQoL assessment among people with DM, the *Medical Outcomes Study 36 – Short-Form* (SF-36)[7] has been required in both international,[3,8,9] as well as national[10,11] reports.

In general, more recent studies suggest that the presence of DM negatively interfered in the people's HRQoL assessments.[3,8,9]

In a study carried out on American Indians from two culturally distinct tribes, in an attempt to assess the HRQoL of people with DM and/or arterial hypertension using the SF-36, the results allowed the researcher to identify that participants that presented both illnesses presented the worst HRQoL assessments. The authors suggest that, as DM and arterial hypertension are more prevalent in patients with more advanced ages, other studies should be developed to determine if the same results can be repeated with people of over 55 years of age.[3]

In another study carried out in Malaysia on a sample of 150 people with DM, aimed at comparing the quality of life of type-2 DM patients as regards the control of glycemia, by evaluating the glucose hemoglobin, verified that the participants who presented a poor control of glycemia presented averages (standard deviation) that were less than the components of physical functioning (PF), 65.4 (9.0); general health perception (GH), 58.9 (7.3); social functioning (SF), 73.9 (8.4); and mental health (MH), 71.8

(6.9), according to the model adjusted for age and the duration of the illness. The SF-36 scores from this group were also lower than those of the general population of Malaysia.[8]

Findings from a study carried out in the USA on people with and without type-2 DM, who did physical activity, revealed that DM was associated with the worst assessments of all the components of the SF-36. However, this difference proved to be statistically significant only for the components of GH and vitality (VT), as well as for all of the components that make up the category or physical summary of the SF-36. Among DM patients, the VT component proved to be more compromising (average of 63.5).[9] By contrast, in a study carried out in Brazil on type-1 and type-2 DM patients treated by medical teams from the Family Health System, the most component that showed the greatest loss was role limitations due to physical problems (RP) (average of 38.6). Nonetheless, all of the components of the SF-36 presented average values that were lower when compared to findings from the study carried out in the USA.[10]

Some authors emphasize the relations between the HRQoL of DM patients and variables such as gender,[12] age, practice of physical activity,[9] and the presence of comorbidity, such as arterial hypertension.[3] Thus, considering that DM is multifactorial, with possibility of both the illness and the treatment interfering in the health of the individual in various dimensions, that the participants of this research are attended to by a multidisciplinary team in a specialized health service of endocrinology, and that no prior reports could be found in the literature which dealt with the northeastern regions of Brazil as regards the HRQoL assessments of DM patients, the present study aimed to assess the HRQoL of type-2 DM patients and its relationship with the variables of gender, age, time since the diagnosis of the illness, arterial hypertension, and the practice of physical activity.

The outcome of this research can contribute to the assessment of results from health service treatments in which the research was performed, aimed at the promotion of health and, consequently, improvements in the HRQoL of DM patients.

MATERIALS AND METHODS

The present work is a cross-sectional, descriptive, exploratory study developed at the Endocrinology Clinic of Universidade Federal de Sergipe. In this clinic, patients are treated by a multidisciplinary team made up of a doctor, a nurse, and a nutritionist. This study consisted of a convenience sample made up of 170 type-2 DM patients, using an inclusion criterion of an age of equal to or greater than 18 years of age and an exclusion criterion of those who present some form of incapacity to respond to or comprehend the questions, identified by the researcher during the interview.

The participants were approached in the order in which they arrived to be attended to by the multidisciplinary team, according to the criteria described above. The development of the study was carried out according to that set forth by Resolution Number 196/96 of the Brazilian National Health Board.[13] The project was approved by the Committee on Ethics in Research from Universidade Federal de Sergipe (CAAE number 0170.0.107.000-10).

Data collection was performed by researchers from February to August 2011, by means of individual interviews and reviews of participants' medical records. The interviews lasted an average of 20 min.

Two instruments were used: one for the sociodemographic (age, gender, education level, marital status, professional status) and clinical (associated illnesses, time with DM, practice of physical activity, treatment of DM) characterization of the subjects, and another to assess the HRQoL, the SF-36,[7] in its translated and validated Portuguese version.[14]

The use of the SF-36 is justified as it is an instrument which presents a satisfactory internal consistency in studies carried out on DM patients,[9] which is easily applied and understood,[15] which is not specific for a determined age, illness, or treatment group, and which is short, characteristics which are important in the choice of a measurement instrument.

The SF-36 is a multidimensional questionnaire, made up of 36 items encompassing eight components: PF (ten items); RP (four items); bodily pain (BP) (two items); GH (five items); VT (four items); SF (two items); role limitations due to emotional problems (RE) (three items); MH (five items); and one other question for the comparative assessment of the current general state of health with that of one year prior to the study. The components can be grouped into two main categories: the physical (PF, RP, BP, and GH) and the mental (MH, RE, SF, and VT).[14]

This instrument allows one to obtain data referent to the last four weeks before the study and to assess both the negative (disease/illness) and the positive (well-being) aspects of the subject. To assess the results, the answers to the items are computed in their respective components[14] and these values are evaluated on a scale of 0 to 100. Lower values reflect a perception of poor health and pain (worst HRQoL assessment), whereas high values reflect a perception of good health, an absence of functional deficits and of pain (best HRQoL assessment).[7,14]

The data were processed and analyzed using a statistics program. To produce a descriptive analysis of the variable, this study used measurements of position (average, median) and variability (standard deviation) for continuous variables (age and time since the diagnosis of the illness), as well as of the simple frequency of the core variables (gender, arterial hypertension, and practice of physical activity). The majority of SF-36 components within this sample did not present a normal distribution, except for the GH and MH. Therefore, the use of parametric tests was substituted by the use of non-parametric tests. The Mann-Whitney test was used to compare the HRQoL values according to gender, comorbidity, arterial hypertension, and practice of physical activity. Spearman's correlation test was performed to assess the correlations among the HRQoL, age, and time with DM. The internal consistency of the items of the SF-36 in the studied sample was verified by applying Cronbach's alpha. The significance level was set at 0.05.

RESULTS

The present study included a sample of 170 type-2 DM patients. As can be seen in Table 1, the average age was above 60 years and the majority of the participants were female, with a low education level, were married/stable union, and had no paid job. The most prevalent comorbidity was arterial hypertension and the average length of time with DM was above 15 years. The majority used insulin, associated or not with the use of oral hypoglycemics.

Table 1 - Sociodemographic and clinical characterization of the 170 participants – Aracaju, Brazil, 2011

Variables	Number (%)	Interval	Percentages 25 / 50 / 75	Average (S.D.)
Age (years)				
		33-91	55 / 62 / 70	61,8 (11,3)
Gender				
Female	126 (74,1)			
Male	44 (25,9)			
Education				
Illiterate	17 (10,0)			
Elementary Education	124 (72,9)			
High School Education	25 (14,7)			
Higher Education	04 (2,4)			

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Table 1 - Sociodemographic and clinical characterization of the 170 participants – Aracaju, Brazil, 2011

Variável	nº (%)	Intervalo	Percentis 25 / 50 / 75	Média (D.P.)
Marital Status				
Married/Stable Union	90 (52,9)			
Single/divorced/widow	80 (47,1)			
Professional Status				
Has no paid job	133 (68,3)			
Works in a paid job	37 (21,8)			
Associated Illnesses				
Arterial Hypertension	138 (81,2)			
Dyslipidemia	83 (48,8)			
Nephropathy	12 (7,1)			
Time with DM (years)				
		1-40	10/ 16/ 20	15,9 (7,9)
Physical Activity				
No	88 (51,8)			
Yes	82 (48,2)			
Treatment				
Diet	02 (1,2)			
Diet and Oral Hypoglicemics	39 (22,9)			
Oral Hypoglicemics and Insulin	72 (42,4)			
Insulin	57 (33,5)			

S.D. – standard deviation.
Source: Drafted by authors based on research data.

In the HRQoL assessment of the participants, it could be observed that only one component of the SF-36 presented a median value of lower than 50 (PF), which corresponds to half of the maximum score for each component, which is 100, thus illustrating a greater loss in this component. The components of SF, RE, and RP presented a better assessment, as compared to the other components (Table, 2).

As regards the internal consistency of the SF-36 in the studied sample, it could be verified that Cronbach's alpha varied from 0.61 (VT) to 0.96 (RE) (Table 2).

In the assessment of HRQoL measurements as regards the gender of the participants, it could be observed that the men presented a better assessment in all of the components of the SF-36. It is important to note that these differences were statistically significant for the majority of components, except for the GH (Table 3).

Concerning the practice of physical activity, according to the numbers, the group which practiced physical activity presented a better HRQoL assessment. It is important to note that these differences were statistically significant for seven of the eight components (Table 4).

Table 2 - Descriptive statistics and internal consistency of the SF-36 – Aracaju, Brazil, 2011

Variables	Average (DP)	Median	Cronbach's Alpha
SF-36 Components			
SF (2 items)	84,8 (23,4)	100	0,73
RE (3 items)	72,1 (43,3)	100	0,96
RP (4 items)	67,3 (44,4)	100	0,95
MH (5 items)	64,0 (19,9)	64	0,74
BP (2 items)	61,7 (33,4)	62	0,91
VT (4 items)	56,3 (19,9)	60	0,61
GH (5 items)	52,6 (22,9)	52	0,64
PF (10 items)	46,2 (32,8)	45	0,94

SF-36: Medical Outcomes Study 36 – Short-Form
PF: physical functioning; RP: role limitations due to physical problems; BP: bodily pain; GH: general health perception; VT: vitality; SF: social functioning; RE: role limitations due to emotional problems; MH: mental health.
Source: Drafted by the authors based on research data.

Table 3 - Average values of eight components of the SF-36, according to the gender of the participants and the probability values (p) associated with the Mann-Whitney test – Aracaju, Brazil, 2011

SF-36 Components	Gender				
	Male		Female		p
	M (S.D.)	Min – Max	M (S.D.)	Min – Max	
SF	94,6 (13,5)	37,5 – 100,0	81,4 (25,2)	12,5 – 100,0	<0,05
RE	85,6 (34,7)	0,0 – 100,0	67,4 (45,1)	0,0 – 100,0	<0,05
RP	82,9 (36,8)	0,0-100,0	61,7 (45,4)	0,0 – 100,0	<0,05
BP	76,4 (31,5)	0,0-100,0	56,6 (32,6)	0,0 – 100,0	<0,05
MH	73,0 (16,5)	32,0 – 96,0	60,8 (20,0)	8,0 – 100,0	<0,05
VT	63,8 (16,5)	15,0 – 100,0	53,6 (20,3)	10,0 – 100,0	<0,05
PF	60,6 (36,1)	0,0-100,0	41,2 (30,2)	0,0 – 100,0	<0,05
GH	54,5 (20,9)	10,0 – 100,0	52,0 (23,6)	5,0 – 100,0	>0,05

SF-36: Medical Outcomes Study 36 – Short-Form. PF: physical functioning; RP: role limitations due to physical problems; BP: bodily pain; GH: general health perception; VT: vitality; SF: social functioning; RE: role limitations due to emotional problems; MH: mental health. M: Average. Min: Minimum. Max: Maximum.
Source: Drafted by authors based on research data.

Table 4 - Average values of the eight SF-36 components, according to the practice of physical activity and the probability values (*p*) associated with the Mann-Whitney test – Aracaju, Brazil, 2011

SF-36 Components	Physical Activity		
	Yes	No	p
	Average (S.D.)	Average (S.D.)	
SF	91,0 (17,4)	79,1 (26,7)	<0,05
RE	80,8 (35,5)	64,0 (46,1)	<0,05
RP	75,3 (39,5)	59,6 (47,2)	<0,05
BP	69,2 (27,8)	54,6 (36,6)	<0,05
MH	65,6 (21,8)	62,5 (17,8)	>0,05
VT	60,4 (21,5)	52,4 (17,5)	<0,05
PF	58,3 (29,7)	35,0 (31,7)	<0,05
GH	57,1 (22,9)	48,4 (22,3)	<0,05

PF: physical functioning; RP: role limitations due to physical problems; BP: bodily pain; GH: general health perception; VT: vitality; SF: social functioning; RE: role limitations due to emotional problems; MH: mental health.
Source: Drafted by authors based on research data.

When the association among arterial hypertension, co-morbidity, and the SF-36 components was tested, it could be noted that the participants who did not suffer from hypertension presented higher averages (standard-deviation) in the components of PF, 60.6 (30.1); RP, 67.9 (42.7); GH, 57.9 (25.7); VT, 58.9 (24.1); and SF, 88.2 (21.5). Nevertheless, this difference was only statistically significant (*p*<0.05) as regards the PF component, with the patients with DM and arterial hypertension presenting lower average values.

No correlations could be drawn among the age of the participants, nor between the time with DM and the SF-36 components (r<0.30 for all correlations).

DISCUSSION

Concerning the sociodemographic characteristics, this study's results proved to be similar to those from other studies carried out on DM patients. Among the findings, it could be verified that the majority of the participants were female and had a partner,[10,11] while the average age was greater than that reported in other studies.[9,10] One possible justification for the greater prevalence of the female gender may well be related to the view that still exists about the man as an invulnerable being, thus rejecting preventive attitudes, since the act of seeking out a health service could be seen as a weakness, more commonly related, in their imagination, to women. Another aspect is the fear of knowing that one might actually be ill, as well as the shame of exposing one's body. By contrast, health services are still not organized enough to attend to these male demands.[16]

The participants of this study demonstrated a greater limitation in carrying out activities, from the more vigorous, such as running, to the more moderate, such as taking a shower, getting dressed (PF). This result is similar to that reported in the national research whose average value for this component was 48.2.[10] The association of DM with other comorbidities, such as arterial hypertension, may well explain the greater loss in the PF component, considering that 81.2% of the participants of this study also had arterial hypertension. When the association between the two illnesses and the SF-36 components was tested, it could be found that the group with DM and arterial hypertension presented less average values in five of the eight components, when compared to the group with only DM. Nonetheless, it should be noted that a statistically significant difference only occurred (*p*<0.05) when compared with the PF component. In this sense, in the study carried out on American Indians, it could be observed that the HRQoL of

the participants with DM and arterial hypertension was worse when compared with those who presented only one of these illnesses, especially as regards the PF component.[3]

The association of DM with arterial hypertension, in addition to increasing the risk of cardiovascular diseases, can also interfere in the HRQoL, especially when performing daily activities. Such a result can aid in the planning of actions aimed at improving the functional capacity of DM patients cared for at clinics where this research was carried out.

The results also indicate that the participants of this study presented less commitment in performing social activities, such as visiting friends and relatives (SF), as well as professional and/or domestic activities, given their emotional health (RE). The RP component received a high score, suggesting that, although the participants presented limitations in performing certain vigorous and moderate activities (PF), their physical health did not interfere in performing professional and/or domestic activities. This result proved to be different from that presented in a study carried out on DM patients in Brazil, which presented a greater commitment in the RP component of the SF-36.[10]

Men presented a better assessment of HRQoL as compared to women. One possible justification for a worse assessment of HRQoL among women may well be related to psychological alterations, such as depression. Although the presence of depression was not assessed in this study, this variable has been assessed by some authors as related to the prevalence of DM.[17] Women are more susceptible to this psychological alteration than are men, and this increased vulnerability is attributed to biological processes, including genetic vulnerability, hormonal fluctuations, and sensitivity to these fluctuations. Depression in women can develop during different phases of the reproductive cycle (premenstrual dysphoria, depression during pregnancy, depression during menopause).[18]

Physical activity appeared as a differential. The majority of participants that practiced physical activity presented better HRQoL assessments. This result is in accordance with a study carried out in the USA with 217 participants – 98 with DM and 119 without the illness. In this American study, the adding of physical conditioning interfered positively in the HRQoL of type-2 DM patients.[9]

The practice of physical activity has received incentives from health care professionals; however, the results of the present study showed that slightly more than half of the participants did not practice physical activity. In this sense, interventions are necessary which, in addition to raising awareness concerning the role of practicing regular physical activity for one's life, also make the patients' development more feasible.

The present study has limitations, such as the fact that the sample consists mainly of people with a low educational level, thus representing only a small portion of the population of people with DM, as well as the fact that a glycemic control was not performed to assess the HRQoL of this variable. Future studies should be developed with DM patients who reside in the northeastern regions of Brazil, who receive other health care services, such as primary health care, in an attempt to generalize the results for the entire Brazilian population.

CONCLUSION

The participants of the present study presented a better assessment in the majority of components that integrate the category of mental health of the SF-36. The PF component presented the greatest loss. Men presented a better HRQoL assessment when compared to women. The practice of physical activity led to a better HRQoL. Such results can aid in the planning of nursing interventions geared toward type-2 DM patients in an attempt to promote a better HRQoL for these individuals. Nevertheless, future studies among DM patients are warranted in an attempt to assess the presence of depression and its relation to HRQoL.

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