Glycemic control, perceived social support and self-care of individuals with type 2 diabetes

Control glicémico, apoyo social percibido y cuidado personal de personas con diabetes tipo 2

Controle glicêmico, suporte social percebido e o autocuidado de indivíduos com diabetes tipo 2

ABSTRACT

Objective: To evaluate the degree of perceived social support and its relationship with self-care and glycemic control of type 2 diabetic individuals. Methodology: Cross-sectional research, carried out with 154 diabetic individuals over the age of 18, monitored in health units. Sociodemographic, anthropometric, clinical, self-care and social support variables related to glycemic control were analyzed. For the analysis of generic variables, a simple frequency study was carried out and the measures of central tendency were calculated. To check the association of comorbidities with glycemic control, the Chi-square test was used. Results: Participants achieved good scores in some self-care activities and, despite having little social support, they were satisfied. When associating self-care activities with the social support received, there was no statistically significant association. Conclusion: There was an association between some comorbidities, such as hypertension, obesity, kidney disease, depression and the use of insulin with glycemic control, which reinforces the need to increasingly encourage the search for control among individuals with type 2 diabetes.

DESCRIPTORS: Diabetes Mellitus; Social Support; Self Care; Nursing; Blood Glucose; Metabolic Diseases.

RESUMEN

Objetivo: Evaluar el grado de apoyo social percibido y su relación con el autocuidado y el control glucémico de los individuos con diabetes tipo 2. Metodología: Investigación transversal, realizada con 154 individuos con diabetes mayores de 18 años, monitoreados en unidades de salud. Se analizaron variables sociodemográficas, antropométricas, clínicas, de autocuidado y de apoyo social relacionadas con el control glucémico. Para el análisis de variables genéricas, se realizó un estudio de frecuencia simple y se calcularon las medidas de tendencia central. Para verificar la asociación de comorbilidades con el control glucémico, se utilizó la prueba de Chi-cuadrado. Resultados: Los participantes lograron buenos puntajes en algunas actividades de autocuidado y, a pesar de tener poco apoyo social, quedaron satisfechos. Al asociar las actividades de autocuidado con el apoyo social recibido, no hubo asociación estadísticamente significativa. Conclusión: hubo una asociación entre algunas comorbilidades, como hipertensión, obesidad, enfermedad renal, depresión y el uso de insulina con control glucémico, lo que refuerza la necesidad de alentar cada vez más la búsqueda de control entre las personas con diabetes tipo 2.

DESCRIPTORES: Diabetes Mellitus; Apoyo Social; Autocuidado; Enfermería; Glucemia; Enfermedades Metabólicas.

RESUMO

Objetivo: Avaliar o grau de suporte social percebido e sua relação com o autocuidado e o controle glicêmico dos indivíduos diabéticos tipo 2. Metodologia: Pesquisa transversal, realizada com 154 indivíduos diabéticos com idade superior a 18 anos, acompanhados em unidades de saúde. Foram analisadas variáveis sociodemográficas, antropométricas, clínicas, de autocuidado e de suporte social relacionadas ao controle glicêmico. Para a análise das variáveis de caráter genérico, foi realizado um estudo de frequência simples e calculadas as medidas de tendência central. Para verificar a associação das comorbidades com o controle glicêmico foi utilizado o teste Qui-quadrado. Resultados: Os participantes atingiram boa pontuação em algumas atividades do autocuidado e, apesar de terem pouco apoio social, se sentiam satisfeitos. Ao se associar as atividades de autocuidado com o suporte social recebido, não houve associação estatisticamente significativa. Conclusão: Houve associação entre algumas comorbidades, como Hipertensão, obesidade, nefropatias, depressão e o uso de insulina com o controle glicêmico, o que reforça a necessidade de estimular cada vez mais a busca do controle entre os indivíduos com diabetes tipo 2.

DESCRITORES: Diabetes Mellitus; Apoio Social; Autocuidado; Enfermagem; Glicemia; Doenças Metabólicas.

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INTRODUCTION

Diabetes is a rapidly growing disease among chronic diseases. It is part of a group of metabolic diseases characterized by high blood glucose levels. Its complications determine a huge health care burden, with many challenges for individuals and health systems[1].

A multiplicity of factors are involved in the global epidemic of diabetes mellitus (DM), among them: the increase in obesity, physical inactivity, the introduction of westernized diets based on fast food, the breakdown of family support, in addition to the stress resulting from long hours of work, intense professional competition, all resulting in a lack of time for physical exercise and a general neglect of personal health[1].

In Brazil, the prevalence of DM in the adult population in the 1980s was estimated at 7.6%[2]. Currently, there are studies indicating higher rates as 13.5% in São Carlos - SP[3,4] and 15% in Ribeirão Preto - SP[4]. The Longitudinal Study of Adult Health – ELSA[5], a mul-

ticenter study on diabetes, carried out with 18,000 individuals from six higher education institutions, started in 2008, revealed that 19% of the participants were diabetic and of these, 53% had no previous diagnosis.

Studies claim that several countries have been concerned with health-related research and its relationship to social support. However, with regard to the need for social support among people with chronic diseases, especially DM, little attention has been paid in countries like Brazil[6]. Allied to this, there are few nursing publications related to social support for people with diabetes. This fact makes it difficult to care for diabetics, as it is a way of helping individuals with their emotional needs and health care, so that they feel safe, loved and cared for, with a sense of well-being, favoring the development of activities self-care.

Barrera[7] conceptualizes perceived social support as the cognitive assessment that the individual makes in relation to the various domains of his life, in which he sees himself safely connec-

ted to other users and feels loved and esteemed by others. It is important that a distinction be made between social support and social network, because, despite being interconnected, they have differences between them. The social network refers to the structural or institutional dimension linked to an individual, exemplified by the neighborhood network, religious organizations, the health system and the school[8].

The goal in treating individuals with type 2 diabetes (DM2) is to lead them to achieve good glycemic control for the prevention of complications related to the disease and, therefore, self-care should be encouraged. Self-care and support from people living with the diabetic, such as family members, friends, neighbors, people from the community, including the health team, are important factors in helping individuals to achieve their glycemic control.

The problem of long-term difficulty with glycemic control is a topic of great interest for diabetics, as it is sufficiently demonstrated that the only effective way to prevent the degenerative

disorders typical of diabetes is a strict control of blood glucose, avoiding important fluctuations[9]. Although there is a ministerial program in Brazil for the care of diabetics in primary care and it has guidelines and systematized actions to be applied by health professionals to diabetics, it is observed in practice that these individuals have difficulties in achieving good glycemic control.

As a way to prevent and treat chronic diseases, including DM, the World Health Organization (WHO) guides education for self-care, which aims to allow the person's involvement in their treatment and the proposed therapeutic scheme[10]. Self-care describes and explains the practice of care performed by the person with a need to maintain their health and well-being. It involves the participation of the individual with autonomy, freedom and responsibility in the choices that aim at their well-being, making it necessary to be able to make them. It means to stop being passive in relation to the concepts of self-care and medical guidelines.

Social support can be defined as the degree to which interpersonal relationships meet certain needs, or as "an exchange of resources between (at least) two people, which aim to increase the recipient's well-being"[11], that is, the emotional or practical support given by family and / or friends in the form of affection, company, assistance and information, everything that makes the individual loved, esteemed, cared for, valued and safe[12].

Health education focusing on self-care among type 2 diabetics and the organization of support groups can be considered strategies for coping with the disease by individuals, family, community, and health professionals. Knowing and evaluating the social support of individuals with DM2 and the self-care performed by them is very important for the planning of specific interventions by nurses to help adapt to changes imposed by treatment[6].

Given this context, this study aimed to assess the degree of perceived social support and its relationship with self-care and glycemic control in type 2 diabetic individuals.

METHODOLOGY

This is a cross-sectional study with a quantitative approach. The research was carried out in four units of Primary Health Care in a city in the interior of Minas Gerais, in the period between 2015 and 2016, with individuals with DM2. The study included individuals with DM2 registered in the units, aged at least 18 years and able to respond verbally; and diabetics with visual impairment that prevented them from carrying out activities of daily living, such as reading the name of medications and self-administered insulin, were excluded, in addition to those who reported the use of alcohol with more than five doses (greater than or equal to 30 g / day for men and 15 g / day for women) and use of illicit drugs, as these factors suggest changes in some of the variables investigated. The convenience sample consisted of 154 individuals of both sexes with a medical diagnosis of DM2 who came to the unit for consultation or another health procedure and determined after the pilot test.

Sociodemographic and clinical variables were considered in this study, such as Arterial Hypertension, obesity, osteoarticular diseases, hypothyroidism, retinopathy, and neuropathy. Also, the self-care activities, described in the self-care activities questionnaire and the questions in the social support questionnaire. The gold standard variable and study outcome was glycated hemoglobin (HbA1c), categorized according to its indexes in controlled (HbA1c between 4% to 6%), moderate (HbA1c between 6% to 7%) and poorly controlled - HbA1 greater that 7%[13].

The data were obtained through the application of two questionnaires translated and validated for the Portuguese language; the Social Support Questionnaire (SSQ) and the Diabetes Self-Care Activities Questionnaire - QAD[14]. A structured instrument was also used to obtain sociodemographic, anthropometric, and clinical data.

The diabetes self-care questionnaire was developed to systematically assess self-care activities in DM, in which it questions the performance of activities by individuals in the last seven days, by measuring five dimensions of therapy in DM: general food , specific food, physical activity, use of medication and blood glucose monitoring, foot care and smoking. The score is counted for each of the dimensions by means of the average number of days (scale of 0-7), with zero being the least desirable situation and seven being the most favorable. In the specific diet dimension, items that question the consumption of foods high in fat and sugar had the score of the score reversed, that is, 7 = 0; 6 = 1; [...][14].

The social support questionnaire provides data on dimensions of social support such as the presence / existence of individuals capable of providing support in different situations, the perception / identification of available support and the assessment of the support situation[15]. The SSQ consists of 27 questions and each question asks for an answer in two parts: in the first, the number of sources of perceived social support (SSQ-N) must be indicated, and the respondent can list up to nine possibilities (or the none option); in the second part, the respondent must report on this satisfaction with this support, on a 6 (six) point Likert scale (ranging from very satisfied to very dissatisfied). Both questionnaires were validated for the Brazilian population[14,15].

After accepting to participate in the study and signing the Free and Informed Consent Form, the participants were interviewed individually, in a private environment with the application of a structured questionnaire, containing questions related to sociodemographic data (age, sex, color, religion, marital status, income , schoo-

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ling), anthropometric (weight, height, waist circumference), lifestyle (use of alcohol, tobacco), in addition to searching the medical records for comorbidities and the value of glycated hemoglobin in the last three months prior to the interview. At this time, self-care, and the degree of satisfaction with the support received through the application of questionnaires on self-care in diabetes and social support were also investigated, both of which have already been validated.

Data were tabulated in Microsoft Excel®, version 6.0 and analyzed in the SAS statistical software version 9.4, with the descriptive analyzes of the data represented by frequencies and the inferential ones by measures of central tendency (mean and median) and of variability (standard deviation and amplitude). To analyze the associations between qualitative variables, the Chi-square test was applied. For all analyzes, the test was considered significant if the p-alpha value was equal to or less than 0.05.

As for ethical aspects, the guidelines recommended for research with human beings were followed by Resolution No. 466/2012 of the National Health Council and data collection only occurred after approval of the project by the Unicamp Research Ethics Committee, under the number 716.105 / 2014.

RESULTS

Of the 154 participants, the majority were female (62.34%), white (50%), who followed some religion (93.5%) and retired (61, 6%). As for marital status and family arrangement, they were married (46.7%) and lived alone (26.6%), the average number of children was 2.32. Regarding age, it ranged from 35 to 91 years, with an average of 63.7 (SD ± 11.4). Regarding anthropometric and clinical data, obesity was evident in 51.9% of the sample. The BMI showed an average of 29.4 kg / m2, the use of tobacco and alcohol were reported by 5.8% and 12.3% of the sample, respecti-

vely. Treatment time ranged from a few months to 32 years, with an average of 10.6 years (SD ± 7.3). HbA1c ranged from 4.7 to 15%, with an average of 7.7% and it was found that 1.95% of the participants had glycemic control, in addition to an average fasting glycemia equal to 145.4mg / dL (SD ± 69.7).

Regarding the average of self-care and social support activities, the variables related to the consumption of fruits and or vegetables (6.0), the habit of drying interdigital spaces (6.2) and taking hypoglycemic agents (6, 5) reached an average close to the maximum score, which is seven, but the practice of physical activity (2.7) obtained an average below the desired, which is also seven. Regarding the number of people recognized as offering support by the interviewed diabetics, the average was 1.2 people per diabetic with a median of 1.15 and the degree of satisfaction with the social support received had an average of 5.2 and median of 5.6 (Table 1).

Table 2 shows the associations made

Table 1. Self-care activities and social support perception of type 2 diabetic patients. Juiz de Fora, MG, Brazil, 2017 (n = 154)

Variável	n	Média	DP	Mín.	Q1	Media.	Q3	Máx.
Seguiu dieta saudável	154	5,14	2,43	0	3	7,0	7	7
Seguiu orientação alimentar profissional	154	5,19	2,35	0	5	6,0	7	7
Comeu frutas e ou vegetais	154	6,01	1,68	0	5	7,0	7	7
Comeu alimentos gordurosos	154	3,73	2,67	0	1	3,0	7	7
Comeu doce	154	1,97	2,43	0	0	1,0	3	7
Realizou atividade física 30 mim	154	2,95	2,93	0	0	2,5	6	7
Praticou atividade física específica	154	2,73	2,88	0	0	2,0	6	7
Avaliou a glicemia	154	4,34	2,96	0	1	6,0	7	7
Avaliou a glicemia conforme recomendação profissional	154	4,04	3,16	0	0	5,5	7	7
Examinou os pés	154	5,40	2,60	0	4	7,0	7	7
Examinou dentro dos sapatos	154	4,49	3,13	0	0	7,0	7	7
Secou os espaços interdigitais	154	6,21	2,01	0	7	7,0	7	7
Tomou os hipoglicemiantes (insulina e comprimidos)	154	6,53	1,55	0	7	7,0	7	7
Tomou insulina	154	4,49	3,29	0	0	7,0	7	7
Pessoas percebidas como promotoras de suporte social	154	1,21	0,46	0,19	1,00	1,15	1,48	2,63
Satisfação com o suporte social	154	5,21	1,10	1,22	4,89	5,69	6,00	6,00

Notes: SD - Standard deviation; Min - Minimum; Average. - Median; Max - Max.

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between glycemic control, the comorbidities found in this study and the use of insulin. It was evident that individuals with HbA1c classified as poorly controlled had hypertension (p = 0.0136), obesity (p = 0.0042), kidney diseases (p = 0.0207), depression (p = 0.0092) and had insulin use (p = 0.0030), showing a statistically significant association between them.

When associating the self-care activities of patients with DM2 and the social support (SS) received, there was no statistically significant association.

DISCUSSION

In this study, most participants

Table 2. Association of comorbidities of type 2 diabetic patients with the classification of HbA1c. Juiz de Fora, MG, Brazil, 2017			
	HbA1c classificação		
Variável	**Controlada/moderada 4% a 7% – n (%)**	**Mal controlada >7% – n (%)**	**p-valor***
Hipertensão			0,0136
Não	17 (65,38)	9 (34,62)	
Sim	50 (39,06)	78 (60,94)	
Obesidade			0,0042
Não	41 (55,41)	33 (44,59)	
Sim	26 (32,50)	54 (67,50)	
Nefropatias			0,0207
Não	65 (46,43)	75 (53,57)	
Sim	2 (14,29)	12 (85,71)	
Retinopatias			0,1737
Não	42 (48,28)	45 (51,72)	
Sim	25 (37,31)	42 (62,69)	
Neuropatias			0,0607
Não	29 (53,7)	25 (46,30)	
Sim	38 (38,00)	62 (62,00)	
Hipotireoidismo			0,8852
Não	58 (43,28)	76 (56,72)	
Sim	9 (45,00)	11 (55,00)	
Depressão			0,0092
Não	64 (47,41)	71 (52,59)	
Sim	3 (15,79)	16 (84,21)	
Doenças articulares e musculares			0,1476
Não	30 (50,85)	29 (49,15)	
Sim	37 (38,95)	58 (61,05)	
Dislipidemia			0,4475
Não	19 (48,72)	20 (51,28)	
Sim	48 (41,74)	67 (58,26)	
Insulina			0,0030
Não	35 (58,33)	25 (41,67)	
Sim	32 (34,04)	62 (65,96)	

Notes: * p-value obtained through the Chi-square test.

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with DM2 were female, with an average age of 63.7 years, low education and income, aspects similar to other studies[16,17]. Several national and international studies have evidenced the preponderance of type 2 DM in people aged between 45 and 64 years, increasing significantly in individuals aged 65 years and over[2,18], reinforcing that this is a public health problem in view of the increased life expectancy of the Brazilian people, favoring aging and, consequently, a higher prevalence of chronic non-communicable diseases, such as DM[2,19].

This fact corroborates with the studies that affirm that age is a complicating factor in achieving good glycemic control, mainly due to the difficulties in understanding information about the disease and applying these guidelines in self-care, resulting from cognitive and functional deficits. progressive over the years, or increasing the degree of dependence to carry out the actions[17,20].

In the evaluation of anthropometric and clinical measures, obesity and abdominal waist were elevated, according to the literature[4,21].

The health problems presented in this research, such as Systemic Arterial Hypertension (SAH), heart disease, musculoskeletal diseases, neuropathy and retinopathy, are comorbidities mentioned in several studies[22,23]. This is mainly justified by their intense relationship with DM, in addition to the metabolic syndrome, which usually precedes DM and is largely responsible for SAH which increases the negative effects of lack of glycemic control, in addition to the development of heart disease and atherosclerotic disease[22].

Cardiovascular diseases (CVDs) are the main causes of death in the Brazilian population, responsible for 20% of deaths in our population over 30 years of age[24]. In this study, the most prevalent were acute myocardial infarction (AMI) and stroke.

Good glycemic control can minimize or control the complications of diabetes. The essential parameter in the evaluation of DM control is the measurement of HbA1C. Studies highlight the close relationship between precise glycemic control, as evidenced by HbA1C, and the prevention of the onset or evolution of chronic DM complications such as diabetic neuropathy and retinopathy, cardiovascular diseases, among others[23,25].

The results of the UKPDS study[24] pointed out that the microvascular complications of DM2 are reduced when there is good glycemic control, which was seen in that study when there was intensive treatment for diabetics and the average HbA1C was equal to 7, reducing the risks by 25%.

The reach of good glycemic control was small among type 2 diabetics. This fact may be influenced by age, educational level, socioeconomic conditions and the complexity of treatment, coupled with the lack of good monitoring and control of this pathology[26].

The SAH is the main comorbidity associated with DM and, in basic health units, hypertension is treated in a special way through the Hypertension Program with health promotion actions, dispensing of hypotensive drugs, diuretics, which in a way , decreases the risk of cardiovascular complications and impacts metabolic control[27].

Obesity, a public health problem worldwide, demonstrates non-adherence to the diet plan, and is an important risk factor also for SAH, cardiovascular diseases, and for DM2 itself, especially when associated with the excessive presence of visceral adipose tissue[20], because individuals with a greater amount of adipose tissue tend to have insulin resistance. It also characterizes the tendency of obesity to make it difficult to achieve good glycemic control, which may increase pre-existing metabolic and cardiovascular problems[4,20].

Depression was also one of the comorbidities in evidence in this study, raising concerns about its deleterious effect in the treatment of diabetes, since depressive symptoms can impair the maintenance of treatment, especially regarding diet and physical activity. This may worsen glycemic control and increase the risk of complications, in addition to stimulating a higher rate of smoking and increased morbidity and mortality, due to the lower lack of maintenance of dietary and drug treatment[28,29].

Diabetic nephropathy (DN) has also been identified as an important complication. DM is considered the most relevant cause of kidney disease, type 2 being the one with the highest incidence and prevalence in the Brazilian and worldwide population and responsible for most people enrolled in dialysis programs[30]. This microvascular complication is also due to the physiological changes caused by persistent hyperglycemia, combined with genetic predisposition and is marked by micro-albuminuria, which is also important for cardiovascular evaluation, given the association that occurs between proteinuria and cardiovascular disease, responsible for a high mortality rate among these people[31].

The maximum score achieved in several parameters of life, such as adequate nutrition and hygiene habits, demonstrates that there is a concern with one of the pillars of the treatment of DM, since healthy eating is a very important element of treatment in order to control the disease[4].

Another item that was highlighted by the proximity of its average to the ideal was the habit of drying the interdigital spaces. This is a care that patients with diabetes should take daily, aiming at the integrity of their skin and, consequently, the prevention of the formation of infected wounds on the feet and culminating in future amputations[4].

In this study, the categorization of the gender variable related to foot care was not made, this action being

punctuated for both sexes, however, it is a fact that men have greater difficulties when compared to women in this care. A prospective study[32], followed by seven years, it identified the male gender as a risk factor for amputation in patients with diabetic foot, combined with other factors together with the longtime of diagnosis, elevated glycated hemoglobin, retinopathy and the use of insulin in the treatment.

The interviewees were quite satisfied with the social support received, but these same individuals who said they were satisfied did not have an effective glycemic control. The support of family members has been understood as a facilitating resource for diabetics who deal with the stress of the disease and for the quality of life[33]. A Finnish study carried out on diabetic individuals concluded that higher social support enables better quality of life[34].

The limitations of this study refer to the cross-sectional design that does not allow to situate the cause and effect relationship but allowed significant statistical associations.

CONCLUSION

The results achieved in this study demonstrated that there was no association between glycemic control, sociodemographic and clinical variables, and social support. Regarding comorbidities, these variables, associated with glycemic control, SAH, obesity, stroke, and depression, showed a statistically significant association with poorly controlled HbA1c.

These pathologies can lead the diabetic to lack of glycemic control due to the metabolic implications that they cause, in addition to making it difficult for the patient to perform the correct steps in the treatment of diabetes, such as practicing physical activity and following the prescribed diet.

The implementation of educational strategies by health professionals, which allows diabetics to adopt health practices with the necessary attitudes to face the demands of diabetes treatment and care, aiming at achieving good glycemic control, as in many diagnoses, the complication is already installed.

Thus, health education activities carried out by professional nurses in health units can be a good time to provide diabetics with other people who have had good experiences with the use of actions in favor of their treatment and, thus, favor in the search for good glycemic control.

In our work, the social support declared by individuals to be satisfactory seems not to be adequate for their treatment and health care.

Adequate glycemic control is a challenge for health teams and patients and requires several ways of coping and patients need to be empowered to care for their health. The patient who is more independent in carrying out the care related to their health may have better control of the parameters related to their disease. ∎

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