



Self-care and clinical parameters in patients with type 2 diabetes mellitus

Autocuidado e parâmetros clínicos em pacientes com diabetes mellitus tipo 2

Autocuidado y parámetros clínicos en pacientes con Diabetes Mellitus tipo 2

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Objective: to verify characteristics related to self-care and clinical parameters in patients with type 2 diabetes mellitus. **Methods:** descriptive and exploratory, cross-sectional study, conducted with 173 patients assisted in 12 Family Health Units in the urban area of a city in the Northeast region of Brazil. **Results:** most participants (61.3%) were female, aged less than 60 years old. There were significant differences in the lower glycemic control ($p = 0.014$), capillary glycemia ($p = 0.018$) and alcohol consumption ($p = 0.015$) for men as well as higher central obesity indexes for women ($p = 0.000$). It was observed high frequency of overweight, abdominal obesity, high blood pressure, elevated blood glucose levels and insufficient levels of physical activity. **Conclusion:** there is the need for nursing actions aimed at improving self-care and control of the clinical parameters in these patients.

Descriptors: Self Care; Chronic Disease; Diabetes Mellitus, Type 2; Nursing.

Objetivo: verificar características relacionadas ao autocuidado e aos parâmetros clínicos em pacientes com Diabetes Mellitus tipo 2. **Métodos:** estudo descritivo-exploratório, de corte transversal, realizado com 173 pacientes assistidos em 12 unidades de saúde da família da zona urbana de uma cidade da região nordeste do Brasil. **Resultados:** a maioria (61,3%) era mulher, na faixa etária igual ou superior a 60 anos. Verificaram-se diferenças significativas quanto ao menor controle glicêmico ($p = 0,014$), valores de glicemia capilar ($p = 0,018$) e uso de bebidas alcoólicas ($p = 0,015$) para homens, bem como maiores índices de obesidade central para mulheres ($p = 0,000$). Foram verificadas altas frequências de excesso de peso, obesidade abdominal, pressão arterial elevada, glicemia elevada e níveis insuficientes de atividade física. **Conclusão:** destaca-se a necessidade de ações da enfermagem voltadas para melhoria do autocuidado e controle dos parâmetros clínicos nesses pacientes.

Descritores: Autocuidado; Doença Crônica; Diabetes Mellitus Tipo 2; Enfermagem.

Objetivo: verificar características relacionadas con el autocuidado y los parámetros clínicos en pacientes con Diabetes Mellitus tipo 2. **Métodos:** estudio descriptivo y exploratorio, transversal, realizado con 173 pacientes atendidos en 12 centros de salud familiar de la zona urbana de una ciudad del noreste brasileño. **Resultados:** la mayoría (61,3%) eran mujeres, de edad igual o superior a 60 años. Hubo diferencias significativas cuanto al menor control glucémico ($p = 0,014$), valores de glucemia capilar ($p = 0,018$) y consumo de alcohol ($p = 0,015$) para hombres, así como mayores tasas de obesidad central para mujeres ($p = 0,000$). Fueron verificadas altas frecuencias de exceso de peso, obesidad abdominal, sobrepeso, presión arterial alta, niveles elevados de glucosa en sangre y actividad física insuficiente. **Conclusión:** hay necesidad de acciones de enfermería dirigidas a mejorar el autocuidado y control de los parámetros clínicos en estos pacientes.

Descritores: Autocuidado; Enfermedad Crónica; Diabetes Mellitus Tipo 2; Enfermería.

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Introduction

Diabetes mellitus is a chronic non-communicable disease with high prevalence in almost all countries, affecting 382 million people worldwide and it is estimated an increase of 55% to 2035⁽¹⁾.

Type 2 diabetes is the most frequent form of the disease, including 90% of all cases⁽²⁾. Acute and chronic complications cause high rates of morbidity and mortality and contribute to rising health system costs. In 2013, this disorder was responsible for approximately 11% of global spending on health care for the population⁽³⁾.

In general, overweight, insulin resistance, dyslipidemia and hypertension are common complications in individuals with type 2 diabetes⁽⁴⁾. These diseases lead to decreased survival and, therefore, it is essential to control the metabolic parameters.

The adoption of daily self-care measures by patients with diabetes is essential for disease control⁽⁵⁾, since interventions in lifestyle can influence the maintenance of glucose levels by improving the quality of life and preventing comorbidities⁽⁶⁾.

Added to this, it is necessary that factors as age, education, access to information, family support, socio-cultural orientation, health status, available resources, skills or self-care deficits, and the personal characteristics are identified for implementation of more effective interventions and to broaden adherence to therapy⁽⁷⁻⁸⁾.

In Primary Care, diabetes control actions are guided in the exercise of universality and comprehensiveness, therefore, it is necessary to know the universe that surrounds the population served, so that the characterization of patients with type 2 diabetes and risk factors for other important comorbidities can provide insight and guidance in decision-making⁽⁹⁾.

Given the above, it is essential that the multidisciplinary health team know how people with

type 2 diabetes perform self-care and control disease progression, for the identification of these actions can guide clinical practice in order to propose a specific and appropriate therapeutic regimen.

Since nursing act as an articulator in the Ministry of Health programs, such as the clinical management system of hypertension and diabetes mellitus in primary care, can guide intervention and health education actions specific to the public in question, by identifying the reality in which patients with type 2 diabetes are inserted. In this context, researchers tried to find out how people affected by diabetes perform self-care and how the clinical variables are related to the staging of type 2 diabetes.

Thus, the objective was to identify the factors related to self-care in patients with type 2 diabetes monitored in primary care and the clinical parameters for disease management.

Method

This is a descriptive, exploratory cross-sectional study with a quantitative approach. It was developed in 12 Family Health Units in the urban area of a city in Northeastern Brazil. The city has 30 health units, of which 10 are located in rural areas and 20 in urban areas. The units were selected considering the demand of diabetic patients, in order to encompass a more heterogeneous sample.

The study population consisted of 1,319 diabetic patients enrolled in the registration and monitoring system of hypertensive and diabetic patients during the research period, resulting in a sample of 296 individuals. To compose sample, appointments were scheduled in the Family Health Units with all patients diagnosed with the disease. However, it was unsuccessful, as most did not attend the meetings. So appointments were carried out through home visits with the aid of community health workers. In the end, 173 individuals agreed to participate.

Data collection took place from March to May

2012. The form used for collection was organized in four parts: (I) sociodemographic data; (II) lifestyle; (III) blood glucose self-monitoring; (IV) anthropometric measurements and blood pressure. The assertions were mostly structured and closed; however, there were also open questions to qualify some closed answers.

To obtain postprandial glucose levels, researchers used OnCall Plus® glucometers, properly calibrated, and needles with dimensions of 13.5 x 4.5 mm. The glucose values were interpreted according to recommendations of the American Diabetes Association⁽¹⁰⁾ and the frequency of monitoring was in accordance with the Brazilian Society of Diabetes⁽¹¹⁾.

Specific cutoff points for adults⁽¹²⁾ and for seniors⁽¹³⁾ were considered for analysis of the values of body mass index. For waist circumference⁽¹²⁾, the recommendations of the World Health Organization were adopted and for blood pressure values⁽¹⁴⁾, the VI Brazilian Guidelines for Hypertension.

Data processing and statistical analysis were performed using the Statistical Package for the Social Sciences® software, version 20.0. For the analysis, the absolute and relative frequencies were used; the normality of the quantitative variables was assessed using the Kolmogorov-Smirnov test. The difference between mean values was analyzed using the Student's t test for independent samples, and to assess the association between the variables and Gender, it was applied the Pearson's Chi-Square test, considering, for all analyzes, the significance level of $p < 0.05$.

The research project was approved by the Research Ethics Committee of the Federal University of Piauí, under opinion Protocol No. 04912011. All participants signed an Informed Consent Form.

Results

A total of 173 patients with type 2 diabetes of both sexes were evaluated, of whom 61.3% were

women. Most (65.9%) participants were in the age group over 60 years old, were married (52.6%) and had incomplete primary education (80.3%) (Table 1).

Table 1 - Sociodemographic characteristics of the study population

Variable	n (%)
Gender	
Female	106 (61.3)
Male	67 (38.7)
Age (years old)	
<60	59 (34.1)
60-69	56 (32.4)
>70	58 (33.5)
Marital status	
Married	91 (52.6)
Widow (er)	42 (24.3)
Separated	16 (9.2)
Single	24 (13.9)
Schooling	
Incomplete Primary Education	139 (80.3)
Complete Primary Education	15 (8.7)
Complete High School	16 (9.2)
Complete Higher Education	3 (1.8)

To evaluate the blood glucose as metabolic control method of research participants, it was investigated the practice of performing blood glucose test, the importance of this test for the individual and the use of insulin, as described in Table 2.

Most men (73.9%) and women (84.6%) performed the verification of blood glucose. Regarding the monitoring of blood glucose, 56.5% of men and 60.6% of women reported having knowledge of the importance of this practice. Both results show no statistically significant differences.

Table 2 - Glucose monitoring of men and women with type 2 diabetes mellitus

Variable	Male	Female	p*
	n (%)	n (%)	
Do you perform blood glucose test?			
Yes	51(73.9)	88 (84.6)	0.083
No	18(26.1)	16 (15.4)	
Do you know the importance of performing blood glucose test?			
Yes	39(56.5)	63 (60.6)	0.595
No	30(43.5)	41 (39.4)	
Do you use insulin?			
Yes	11(15.9)	11 (10.6)	0.300
No	58(84.1)	93 (89.4)	

*Pearson's Chi-Square test

Table 3 presents the mean values of quantitative variables studied. In relation to the variables: age, body mass index, waist circumference and blood pressure, the mean values did not present significant differences in relation to Gender. It is worth noting that the mean values of body mass index and blood glucose were above the goal recommended for the treatment of diabetes mellitus in both sexes, whereas women also showed high waist circumference. In addition, men had higher mean values of blood glucose compared to women ($p = 0.018$).

Table 3 - Mean values and standard deviation of the studied variables in patients with type 2 diabetes mellitus, according to gender

Variable	Male		Female		p*
	Mean	SD	Mean	SD	
Age	63.5	13.9	62.3	12.4	0.538
Body Mass Index	26.6	4.05	27.9	5.2	0.089
Waist Circumference	98.3	13.3	98.0	12.2	0.875
Systolic Blood Pressure	136.3	25.1	136.1	22.1	0.979
Diastolic Blood Pressure	76.2	14.3	75.9	11.7	0.876
Capillary Glycemia	245.1	108.8	206.1	99.1	0.018

SD = Standard Deviation; * Student's t test for independent samples

Clinical and anthropometric parameters of patients with type 2 diabetes are in Table 4. Smoking, physical inactivity and high blood pressure were present in over 50% of individuals, regardless of sex. It was found that men had a higher frequency of alcohol consumption ($p = 0.015$) and lower glycemic control ($p = 0.014$), whereas women presented higher abdominal obesity index ($p = 0.000$).

Table 4 - Clinical and anthropometric parameters in patients with type 2 diabetes mellitus, according to gender

Variable	Male	Female	p*
	n (%)	n (%)	
Alcohol consumption			
Yes	15 (21.7)	09 (8.7)	0.015
No	54 (78.3)	95 (91.3)	
Smoking			
Smoker	35 (50.7)	59 (56.7)	0.437
Non-smoker	34 (49.3)	45(43.3)	
Physical activity			
Active	26 (37.7)	39 (37.5)	0.981
Sedentary	43 (62.3)	65 (62.5)	
Body Mass Index			
Normal	36 (52.2)	48 (46.2)	0.438
Overweight	33 (47.8)	56 (53.8)	
Waist circumference			
Normal	43 (62.3)	21 (20.2)	0,000
Abnormal	26 (37.7)	83 (79.8)	
Blood pressure			
Normal	30 (43.5)	39 (37.5)	0.432
Abnormal	39 (56.5)	65 (62.5)	
Glycemia			
Controlled	24 (34.8)	56 (53.8)	0.014
Uncontrolled	45 (65.2)	48 (46.2)	

*Pearson's Chi-Square test

Discussion

The sociodemographic characteristics of the study population revealed a predominance of females, as found in other studies with type 2 diabetes patients⁽¹⁵⁻¹⁶⁾. These results may be related to higher

care to their own health and search for health services by this group⁽¹⁵⁾. The age group of participants was similar to other studies^(7,15,17).

Regarding the investigation about the glycemic control, it was noticed that both men and women reported knowing the importance of monitoring blood glucose. However, most participants (74%) showed levels of blood glucose unsatisfactory for the treatment, as well as in a study of 437 diabetics in Fortaleza-Ceará, which found 76.4% of the sample with abnormal blood glucose levels⁽¹⁶⁾. As for the current study, this finding may be related to the educational level of the patients, since 80.3% had incomplete primary education, a fact that interferes directly in the self-care performed by these patients.

As noted, the female participants had higher frequency of increased waist circumference than men. Corroborating this fact, a study conducted in the state of Piauí revealed that this group is more prone to central obesity⁽¹⁷⁾.

The prevalence of alcohol consumption found in this study is considered high when compared to a study conducted in Ijuí-Rio Grande do Sul, with 133 diabetics, where 8.3% reported drinking alcohol: 14.3% for men and only 4.8% for women⁽¹⁵⁾.

According to data from the surveillance of risk and protective factors for chronic diseases through telephone survey, the percentage of smokers in Brazil was 12.1% in 2012, being higher in males (15.5%) than in females (9.2%)⁽¹⁸⁾. Thus, the prevalence of smokers in the present study is considered very high when compared with the national average.

A considerable number of patients with type 2 diabetes were classified as sedentary. Similar data were found in a study conducted in Teresina, Piauí, with 400 people enrolled in the registration and monitoring system of hypertension and diabetes, where the practice of regular physical activity has been reported in only 22.5%⁽¹⁹⁾. In contrast, in a study conducted in the Southeast region of Brazil with 423

diabetics, the majority (58.6%) reported adherence to physical activity⁽²⁰⁾. The studied age group and the different protocols used to assess physical activity levels may contribute to these differences.

Conclusion

According to the analyzed data, most patients with type 2 diabetes are seniors, predominantly female. Although most report the performance of blood glucose test and know the importance of glucose monitoring, they exhibited high levels of blood glucose. In addition, high frequencies of overweight, abdominal obesity, high blood pressure and insufficient physical activity levels were observed, factors that may contribute to increased morbidity for these patients in shorter periods of time.

Statistical associations between larger waist circumference indexes and females were observed, whereas men had higher mean values of blood glucose, increased frequency of alcohol consumption and lower glycemic control.

The results are important to emphasize the need for continuous assessment of the health status of this population, from the guidelines granted during consultations as well as their adherence in the home environment. Thus, there is the need for nursing actions aimed at improving self-care and control of the clinical parameters in these patients.

As limitations, it is highlighted the cross-sectional nature of the study and the difficulty in collecting the data with the entire sample stipulated initially, because many people did not attend the scheduled meetings for data collection and/or did not accept to participate in the research when contacted in their homes.

It is required that the study is extended to populations with larger samples of other geographic regions, using comparable methodologies in order to define more precisely the sociodemographic and clinical findings, related to glucose monitoring and

the variables that compose the care of these clients. In addition, longitudinal analyzes can be performed to investigate the effects of interventions on the investigated characters.

Collaborations

Sousa JT contributed to the study design, literature review and data analysis. Macêdo SF contributed to the study design, literature review, data analysis and writing of the article. Silva ARV contributed to critical review and final wording of the article. Moura JRA, Vieira EES and Reis AS contributed to the data analysis and writing of the article. All authors contributed to the critical review and approval of the version to be published.

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