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# Characterization of People with Diabetes Mellitus Assisted in an Outpatient Follow-up Clinic*

ORIGINAL

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## Abstract

**Objective:** To characterize the profile of people with diabetes, according to sociodemographic, clinical and laboratory variables.

**Method:** Cross-sectional study with a quantitative approach, conducted with 110 people with diabetes mellitus treated at an outpatient follow-up clinic of a teaching hospital in João Pessoa - PB, Brazil, from February to June/2015. A form contemplating sociodemographic, clinical and laboratory variables was used for data collection. As for the analysis, descriptive statistics was used, measuring categorical variables, mean and standard deviation for numeric variables.

**Results:** The study revealed that the socio-demographic, clinical and laboratory characteristics increase the risk of morbidity and mortality for the people studied, as well as being impediments to the realization of self-care.

**Conclusion:** The importance of achieving education for self-care was evident. Many of the identified factors can be modified when the person with diabetes has knowledge about their health-disease process, promoting positive attitudes in their care.

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## Introduction

Known as one of the main non-communicable chronic diseases, diabetes mellitus is a chronic degenerative metabolic disorder characte-

 

rized by chronic hyperglycemia, being classified as DM type 1 (DM1) and DM type 2 (DM2). [1]

DM1 results from the destruction of beta cells, usually leading to absolute deficiency of insulin, occurring in 5-10% of the cases and commonly affecting people under 30 years old. DM2 is responsible for 90 to 95% of the cases and is related to progressive loss of insulin secretion and/or resistance to its action. [2, 3]

This chronic condition is one of the major health problems currently, with substantial increase of new cases yearly worldwide, presenting estimates of 425 million people with DM and predictions that such number will raise to 642 million in 2040. In both Central and South Americas, there are 29.6 million people with diabetes and this figure is supposed to reach 48.8 million in 2040. Brazil leads the Latin American countries with the highest occurrence of the disease, represented by 14.3 million brazilians and a prevalence of 8.0% [4], possibly increasing to 23.3 million in the next 25 years. [5, 6]

The high prevalence and incidence of DM are mainly associated with changes in lifestyle, such as increased intake of processed foods, with high levels of fat and sugar, reduced physical exercise, increased life expectancy and the urbanization process. It is worth mentioning the absence of effective public policies that may be paramount in preventing the increase of DM. [5, 7]

Besides the epidemiological representativeness in the world, DM has high morbidity and mortality due to complications inherent to its chronic evolution and poor glycemic control, which may be responsible for chronic renal failure, blindness, macroangiopathies and non-traumatic amputations, reducing life expectancy of the people affected, with consequent negative impacts on social and economic aspects. [8]

DM is also considered a complex disorder due to its multi-pillar treatment and requires that the affected person have active participation, adherence to healthy eating, practising of physical exercises, self-monitoring of blood glucose and correct use of medication. [9]

Adherence to treatment is a major challenge for healthcare professionals because it is linked to social, economic and cultural factors that contribute to the difficulties faced by people with DM when following their therapeutic plan. [10]

As strategy to overcome these barriers, health promotion actions, focusing on self-care education, are considered essential for adherence to treatment and knowledge about the disease, offering resources for the person with DM to have autonomy over their health status. [11]

However, for educational actions to be effective, it is necessary that the health professionals involved in the educational process, especially nurses, considered as caregivers and educators, know the characteristics of the public they are assisting, since they interfere directly in the learning process, indicating factors which facilitate and prevent self-care. Thus, it is understood that the characterization of the profile subsidizes the care planning with interventions directed to the real necessities. [12]

Based on the aforementioned and on the purpose of discovering users with DM who are followed-up in an outpatient endocrinology clinic of a teaching hospital, in order to implement educational actions in health aimed at self-care, the following objective was defined: to characterize the profile of people with DM according to sociodemographic, clinical and laboratory variables.

## Method

This is a transversal study of quantitative approach carried out at an outpatient endocrinology clinic of a teaching hospital, located in the city of João Pessoa – PB, Brazil, which is responsible for providing medical, nutritional and nursing assistance to patients with DM. This healthcare facility was chosen because it is considered a reference unit for this type of care in the state of Paraíba, admitting patients

referred from the Family Health Strategy with the purpose of diagnosing and treating DM on an outpatient level of care.

The study population consisted of people with DM1 and DM2 assisted at the outpatient clinic aforesaid. In order to know the number of patients with DM attending the outpatient clinic, information was requested from the Nursing coordination, which made available a list of the numbers of patients assisted in 2014. Thus, it was possible to identify that, from January to December/2014, 1432 people with DM1 and DM2 were assisted. [13]

According to the number of appointments –1432– and to the national prevalence of people who reported a medical diagnosis of diabetes in the adult (≥ 18 years old) population as a whole - 6.9% - [14], the sample was calculated based on a 5% margin of error and a confidence level of 95% and also considering the proportion of 6.9%, resulting in a minimum total of 98 people with DM to be investigated. On top of the sample calculation, 10% was added for losses and refusals, resulting in 107.8 people; this value was rounded up to the final sample number of 110 people with DM.

The non-probability technique of sample selection was used, on which the inclusion criteria were: to have a medical diagnosis of DM1 or DM2; be over eighteen years old and be assisted at the DM outpatient clinic of the mentioned facility. Pregnant women diagnosed with gestational diabetes were considered as exclusion criteria.

A form developed by the researcher was used for data collection and included sociodemographic, clinical and laboratory variables. The instrument was applied while the patients waited for the medical, nursing and/or nutritional consultation in a private place, to respect the privacy of the participants, in the morning and afternoon shifts, from Monday to Friday, during the months of February to June/2015.

The quantitative data collected were coded and typed, applying the double-typing validation technique in Excel® spreadsheets for Windows XP® from Microsoft® in order to assess consistency. After this validation, the data was statistically treated using SPSS (Statistical Package for the Social Sciences) - version 20.0. Descriptive statistics techniques were used with measuring of frequency of categorical variables, mean and standard deviation for numerical variables.

It should be mentioned that all ethical procedures contemplated in the guidelines and regulatory norms for research involving human beings were considered - Resolution 466/12 of the National Health Council, especially with regard to the free and informed consent of the participants, secrecy and confidentiality of the data. The research project was approved by the Ethics and Research Committee of the Lauro Wanderley University Hospital of the Federal University of Paraíba, according to CAEE 39539014.0.0000.5183.

## Results

The study comprised 110 participants with Diabetes Mellitus; 87 (79.1%) of them were female, 58 (52.7%) were pardo; 65 (69.1%) were married; 43 (39.1%) had not completed elementary school; 73 (66.4%) were Catholic; 46 (41.8%) had income of 1 minimum wage; 76 (69.1%) were from João Pessoa – PB, Brazil, as shown in **Table 1**.

It should be noted that the ages of the participants with DM ranged from 22 to 83, with mean and standard deviation of 54.24 ± 11.64 years, respectively. In relation to occupation, 44 (40%) of them were housewives, 26 (23.6%) were retired/pensioners, 9 (8.2%) were business people, 5 (4.5%) farmers, 4 (3.6%) unemployed and 22 (20.1%) had other occupations (community health agent, laboratory technician, administrative assistant, cleaning agent, babysitter, bricklayer, teacher, nursing auxiliary, cook, seamstress, driver, civil servant, independent worker).

With regard to the clinical characteristics of diabetic patients, anthropometric data showed that

**Table 1.** Distribution of people with Diabetes Mellitus according to sociodemographic data. João Pessoa, PB, Brazil, 2015.

| Variable | n | % |
|---|---|---|
| Gender | | |
| Female | 87 | 79.1 |
| Male | 23 | 20.9 |
| Ethnicity | | |
| Pardo | 58 | 52.7 |
| White | 28 | 25.5 |
| Black | 22 | 20.0 |
| Yellow | 2 | 1.8 |
| Marital Status | | |
| Married | 65 | 69.1 |
| Single | 20 | 18.2 |
| Divorced | 13 | 11.8 |
| Widowed | 12 | 10.9 |
| Schooling | | |
| Illiterate | 10 | 9.1 |
| Incomplete primary school | 43 | 39.1 |
| Completed primary school | 19 | 17.3 |
| Incomplete high school | 5 | 4.5 |
| Complete high school | 27 | 24.5 |
| Higher education | 5 | 4.5 |
| Ongoing higher education | 1 | 0.9 |
| Religion | | |
| Catholic | 73 | 66.4 |
| Evangelical | 31 | 28.2 |
| Spiritist | 2 | 1.8 |
| No religion | 4 | 3.6 |
| Income* | | |
| Up to 1 minimum wage | 61 | 55.4 |
| 1 to 2 minimum wages | 27 | 24.5 |
| 2 to 3 minimum wages | 15 | 13.6 |
| More than 3 minimum wages | 5 | 4.5 |
| Origin | | |
| João Pessoa | 76 | 69.1 |
| Other cities | 34 | 30.9 |

*: Based on the minimum wage of R$ 788.00 in 2015.
* Per capita income between R$ 115.00 and R$ 2,758.00, with mean and standard deviation of R$ 446.10 ± R$ 359.00.

17 (24.3%) adults and 16 (48.5%) elderly were overweight; 36 (51.4%) adults were obese; 10 (58.8%) men and 53 (77.9%) women presented a substantially increased risk for cardiovascular complications, as shown in **Table 2**.

It was not possible to measure the weights and heights of seven participants; thus, the results of the body mass index (BMI) correspond to 103 participants only. Similarly, 25 participants did not have their waists measured; thus the results for this variable correspond to the total of 85 participants.

When it comes to the clinical characteristics, 41 (37.3%) of the patients reported being diagnosed with DM2; however, 64 (58.2%) did not know the type of their DM; 59 (54.1%) were diagnosed more

**Table 2.** Distribution of people with Diabetes Mellitus according to the anthropometric data. João Pessoa, PB, Brazil, 2015.

| Anthropometric variables | n | % |
|---|---|---|
| Adult BMI* (n = 70) | | |
| Underweight | 2 | 2.9 |
| Healthy | 15 | 21.4 |
| Overweight | 17 | 24.3 |
| Class I Obesity | 15 | 21.4 |
| Class II Obesity | 13 | 18.6 |
| Class III Obesity | 8 | 11.4 |
| Elderly BMI (n = 33) | | |
| Underweight | 2 | 6.1 |
| Healthy | 15 | 45.5 |
| Overweight | 16 | 48.5 |
| Waist circumference - female (n = 68) | | |
| No risk for cardiovascular complications | 1 | 1.5 |
| Increased risk for cardiovascular complications | 14 | 20.6 |
| Substantially increased risk for cardiovascular complications | 53 | 77.9 |
| Waist circumference – male (n =17) | | |
| No risk for cardiovascular complications | 5 | 29.4 |
| Increased risk for cardiovascular complications | 2 | 11.8 |
| Substantially increased risk for cardiovascular complications | 10 | 58.8 |

*: Body Mass Index

than five years ago; 6 (5.5%) were smokers and 38 (34.5%) declared themselves as former smokers; 8 (7.3%) consumed alcohol; 75 (68.2%) had high blood pressure; 52 (47.3%) had elevated levels of blood lipids; 5 (4.5%) had acute myocardial infarction; 9 (8.2%) suffered a stroke; 63 (57.3%) were affected by retinopathy; 25 (22.7%) had nephropathy; 53 (48.2%) had neuropathy; 24 (21.8%) had diabetic foot; 2 (1.8%) underwent non-traumatic amputation, according to **Table 3**.

**Table 3.** Distribution of people with Diabetes Mellitus according to the clinical characteristics. João Pessoa, PB, Brazil, 2015.

| Variables | n | % |
|---|---|---|
| Type of DM self-reported | | |
| Type 1 | 5 | 4.5 |
| Type 2 | 41 | 37.3 |
| Does not know | 64 | 58.2 |
| Length of DM | | |
| ≤ 1 year | 11 | 10.1 |
| > 1 year and < 5 years | 39 | 35.8 |
| ≥ 5 years and < 10 years | 31 | 28.4 |
| ≥ 10 years | 28 | 25.7 |
| Does not know | 1 | 0.9 |
| Smoking | | |
| Yes | 6 | 5.5 |
| No | 104 | 94.5 |
| Ex-smoker | | |
| Yes | 38 | 34.5 |
| No | 72 | 65.5 |
| Alcoholism | | |
| Yes | 8 | 7.3 |
| No | 102 | 92.7 |
| High blood pressure | | |
| Yes | 75 | 68.2 |
| No | 35 | 31.8 |
| Dyslipidemia | | |
| Yes | 52 | 47.3 |
| No | 58 | 52.7 |
| Acute myocardial infarction | | |
| Yes | 5 | 4.5 |
| No | 105 | 95.5 |
| Stroke | | |
| Yes | 9 | 8.2 |
| No | 101 | 91.8 |
| Retinopathy | | |
| Yes | 63 | 57.3 |
| No | 47 | 42.7 |
| Nephropathy | | |
| Yes | 25 | 22.7 |
| No | 85 | 77.3 |
| Neuropathy | | |
| Yes | 53 | 48.2 |
| No | 57 | 51.8 |
| Diabetic foot | | |
| Yes | 24 | 21.8 |
| No | 86 | 78.2 |
| Non-traumatic amputation | | |
| Yes | 2 | 1.8 |
| No | 108 | 98.2 |
| Total | 76.19 | 87.50 |

In relation to data about non-pharmacological treatment, it was demonstrated that 81 (73.6%) people with DM were on a diet; 64 (58.2%) did not do physical exercises. However, 34 (77.3%) of the ones who exercised, usually went walking. Concerning the pharmacological treatment, 87 (79.1%) took oral anti-diabetic drugs, which were mostly self-administered (81, 93.1%); 48 (51.6%) used insulin, which was also self-administered (33, 64.7%); e 41 (37.3%) used homemade medicine/teas, as shown in **Table 4**.

According to **Table 4**, 98 (89,1%) of them monitored their capillary blood glucose, especially at the Family Health Unit (47, 48.0%); 40 (36.4%) were monitored with higher frequency monthly; and 49 (44.5%) of them had glucose meters. It should be emphasized that 97 (88.2%) patients did not take

**Table 4.** Distribution of people with Diabetes Mellitus according to treatment and control routine. João Pessoa, PB, Brazil, 2015.

| Variables | n | % |
|---|---|---|
| Diet (n =110) | | |
| Yes | 81 | 73.6 |
| No | 29 | 26.4 |
| Physical exercise (n = 110) | | |
| Yes | 46 | 41.8 |
| No | 64 | 58.2 |
| Type of physical exercise (n =46) | | |
| Walking | 34 | 77.3 |
| Other | 12 | 22.7 |
| Oral antidiabetic drugs (n =105) | | |
| Yes | 87 | 79.1 |
| No | 18 | 16.4 |
| Insulin (n= 110) | | |
| Yes | 48 | 51.6 |
| No | 62 | 56.4 |
| Homemade medicine/tea (n = 110) | | |
| Yes | 41 | 37.3 |
| No | 69 | 62.7 |
| Blood glucose monitoring (n = 110) | | |
| Yes | 98 | 89.1 |
| No | 12 | 10.9 |
| Place where blood glucose is monitored (n = 98) | | |
| At home | | |
| Yes | 44 | 44.9 |
| No | 54 | 55.1 |
| Family Health Unit | | |
| Yes | 47 | 48.0 |
| No | 51 | 52.0 |
| Medical/nursing consultation | | |
| Yes | 11 | 11.2 |
| No | 87 | 88.8 |
| Frequency of capillary blood glucose testing (n =98) | | |
| Daily | 24 | 21.8 |
| Once a week | 16 | 14.5 |
| More than once a week | 13 | 11.8 |
| Fortnightly | 5 | 4.5 |
| Monthly | 40 | 36.4 |
| Have their own glucose meter (n= 110) | | |
| Yes | 49 | 44.5 |
| No | 61 | 55.5 |
| Paticipate in educative groups about diabetes mellitus (n =110) | | |
| Yes | 13 | 11.8 |
| No | 97 | 88.2 |
| Time of follow-up in the service (n =110) | | |
| Less than a year | 39 | 35.5 |
| More than a year | 71 | 64.5 |

part in any educational groups about DM and 71 (64.5%) had been followed-up for more than a year in the service where the study took place.

Regarding laboratorial data, it was demonstrated that the mean and standard deviation of the fasting blood sugar levels were 153.4 ± 56.2mg/dl, ranging from 91.0mg/dl to 336.0mg/dl; capillary blood sugar level of 173.3 ± 76.1mg/dl, ranging from 84.0 mg/dl to 427.0mg/dl and glycated hemoglobin with mean value of 8.0 ± 2.0% and variation of 4.1% to 13.3%, as displayed in **Table 5**.

**Table 5.** Distribution of people with Diabetes mellitus according to laboratory data. João Pessoa, PB, Brazil, 2015.

| Variables | Mean ± Standard Deviation | Minimum | Maximum |
|---|---|---|---|
| | mg/dl | mg/dl | mg/dl |
| Fasting blood sugar level | 153.4 ± 56.2 | 91.0 | 336.0 |
| Capillary blood sugar level | 173.3 ± 76.1 | 84.0 | 427.0 |
| Total Cholesterol | 191.1 ± 52.1 | 99.0 | 316.0 |
| HDL Cholesterol | 39.4 ± 9.3 | 20.4 | 62.2 |
| LDL Cholesterol | 107.6 ± 38.2 | 42.1 | 215.0 |
| Triglycerides | 196.5 ± 126.5 | 59.0 | 690.0 |
| | % | % | % |
| Glycated Hemoglobin | 8.0 ± 2.0 | 4.1 | 13.3 |

In relation to the lipid levels, it was verified that the mean of total cholesterol (191.1 ± 52.1 mg/dl) and the mean of LDL cholesterol (107.6 ± 38.2 mg/dl) are desirable, whilst the triglycerides ones (196.5 ± 126.5 mg/dl) is just within the limit and the HDL cholesterol ones (39.4 ± 9.3 mg/dl) is below the recommended, according to **Table 5**.

## Discussion

Sociodemographic data identified the predominance of women, who represent a large amount of the brazilian population, presenting a higher life expectancy and great perception of diseases and self-care, besides being considered the main users of the Sistema Único de Saúde (SUS), increasing their chances of being diagnosed with DM. However, men are more prone to self-care deficits, leading to higher morbidity and mortality, requiring that healthcare services and professionals pay more attention to such group. [15-17]

Regarding the ethnicity, people who declare themselves as pardo, the mix between white and black people, represent the quantitative of the brazilian population with higher occurrence of DM. [18] It should be noted that the northern and northeastern regions of Brazil are the ones with higher proportions of pardo and black people. [19]

The predominance of married people can be explained by the fact that the majority of the sample is aged over than 40 years. It is noticeable that the person affected by DM needs a carer who can be attentive to their health condition in order to identify potential complications. When facing a disease, the human being becomes fragile, in need of support and care in this moment, and the presence of a companion is essential to better assist and monitor their relative whenever they need it. Some studies demonstrate that the mortality rates are higher for widowers and single people, being considerably low for married people. [20, 21]

Low level of education, which was predominant among the participants of the study and frequently present in studies carried out with people suffering from chronic diseases [22-23], is considered as a contributing factor to non-adherence to self-care, as it is a barrier to comprehending the guidance provided by healthcare professionals. This reality combined with the complexity of the disease and treatment requires that educators in diabetes develop educational strategies which take into consideration the social context in which diabetic patients are inserted, so that educational actions are more effective and achieve the objective of empowering the person with DM towards self-care. [24]

As for religion, literature shows that religious involvement reduces anxiety and emotional conflicts, as well as discourages harmful practices towards health, which favours adherence to treatment. [25]

Financial status is also an important factor that can interfere with the treatment follow-up, since there are several families with only one person as source of income, and the salary is used to provide food for all, which makes adherence to treatment difficult, because it is costly, especially in relation to the diet that is composed of specific foods with special prices in relation to those that make up the basic monthly food basket. [26]

The prevalence of housewives and retirees/pensioners, also found in a study conducted in the countryside of Rio Grande do Sul, Brazil, [27] corroborates the economic difficulties for adherence to treatment. However it shows that these people have more free time and, thus, more chances of participating in educational groups about diabetes and of being followed up more frequently.

The average age of around fifty years corroborates with literature findings demonstrating the tendency of DM more commonly affecting people in working age, leading to loss of capacity and productivity for work, also resulting in negative impacts on the economy due to retirement and early mortality. [28]

Regarding clinical characteristics, it was possible to verify that the participants of the study were

overweight, obese and had excess fat in the abdominal area, which contributes to the appearance of metabolic complications, higher blood pressure, dyslipidemia, resistance to insulin action, as well as increasing three to fourfold the chances of morbidity and mortality due to cardiovascular diseases. [29-30] It is worth mentioning that a weight loss of 5-7% helps reducing insulin resistance and improves glucose and lipid levels. [31]

It was also verified that most of the participants were diagnosed with DM2, which is in agreement with the literature, since this type accounts for 90 to 95% of the cases of DM in adults, with estimates of a 4% increase in new cases until 2030, due to the emergence of overweight/obese people and sedentary lifestyle. [32]

Although the majority of patients had been diagnosed for more than five years, the relevant quantitative group did not know how to report their type of diabetes. This shows a lack of knowledge regarding their health condition, reflecting also the lack of adherence to self-care, since adequate and satisfactory knowledge regarding the health-disease process predisposes people to care for themselves. [24]

It should be pointed that people with DM and longer time of diagnosis have positive and negative aspects regarding adherence to self-care. Regarding the positive ones, due to the longer experience with the disease, they can have more information about the pathology, making them sure and confident about the treatment. On the other hand, the longer time may lead to a lack of motivation to follow the treatment, as a consequence of the absence of effective results, given the chronic condition. [33]

In addition, the longer the duration of DM the greater the severity of the disease and the likelihood of chronic complications – retinopathy, neuropathy, nephropathy, macroangiopathies – suggesting that the study of this association, considering sociodemographic and clinical characteristics, is of paramount importance to direct care in the prevention of those diseases. [34]

It is also worth noting that the prevention of cardiovascular diseases depends on the treatment of risk factors, such as systemic arterial hypertension (SAH). SAH and DM are generally associated in 50% of cases and, combined with dyslipidemia, obesity, smoking, alcoholism and sedentary lifestyle, they trigger micro and macrovascular damages, resulting in high cardiovascular and cerebral morbidity and mortality. [35]

As far as treatment is concerned, most participants reported being on a diet. However, clinical data did not reflect this finding, showing that further studies using specific and reliable instruments are needed to assess adherence to adequate and healthy diet, as about 80% of coronary diseases, 90% of cases of DM2 and 30% of cases of cancer can be prevented by adhering to healthy eating practices, as well as to physical exercises. [36]

Regarding physical exercises, most of them did not do any, which increases the likelihood of complications, once the practicing of physical exercises increases the use of lipids and raises the sensitivity of the cellular membrane to insulin action, which occurs within 12 to 48 hours after exercise. However, when the individual stops exercising, the initial levels of sensitivity return within three to five days, showing that it should be performed regularly. [37-38] The preference for the practice of walks by those who exercise can be justified by low cost and practicality.

The cornerstone of diabetes treatment is based on healthy lifestyle habits such as those already mentioned – regular physical exercise and proper nutrition – which are referred to as non-pharmacological. As pharmacological treatment, oral antidiabetic drugs are the first choice for patients diagnosed with DM2, when there is no efficient response from non-pharmacological care. [35] Insulin, on the other hand, is indicated mainly for people with DM1

and for cases of MD2 who present severe hyperglycemia at diagnosis. [39]

In addition to the aforementioned forms of treatment, it was evidenced that the participants of the study used homemade remedies/teas to control glycemic levels. Studies indicate that the use of complementary therapies is increasingly frequent, because they are less expensive and because they are inserted in the cultural formation of Brazilians. The main medicinal plants with proven glycemia reduction are: *Baccharis trimera* (carqueja), *Bauhinia forficata* (pata de vaca), *Salvia Officinalis* (salvia), *Mormodica charantia* (melão de São Caetano), *Phyllantus niruri* (quebra-pedra) and *Sphaerocarpa* (vegetal insulin). [40, 41]

As for monitoring of capillary glycemia, this is recommended for people with DM who use insulin in multiple doses, three to four times a day; for people with DM2 on oral antidiabetic drugs use, routine monitoring is not recommended. [42] The Family Health Unit and the monthly monitoring, such as location and frequency of monitoring most cited by the participants, respectively, are justified by the DM care line and by the follow-up routine for these users. [39]

It should be noted that Ordinance No. 2,583 on October 10, 2007, considering Federal Law No. 11,347, in 2006, [43] defines the drugs and supplies necessary for the treatment of DM that should be made available to SUS users diagnosed with DM, such as syringes, needles and reagent strips when glucose meters are available.

Laboratorial data shows that mean values of blood glucose levels are outside the range recommended by the American Diabetes Association, according to which the target for glycated hemoglobin should remain below 7% and fasting glycemia between 70-130 mg/DL. [42]

It should be emphasized that, even though the participants of the study are mainly from João Pessoa – PB, Brazil, where Family Health Strategy covers more than 80% of the population [44] and that the patients have been followed up for more than a year by a reference service to people with DM, almost all users did not take part in educational groups about DM. Such fact contributes to non-adherence to self-care, since groups destined to education on diabetes are seen as allies in the treatment of non-communicable chronic diseases by facilitating exchange of experience and knowledge, in addition to strengthening the relationship between healthcare professional and patient. [45]

## Conclusion

It was possible to identify, according to the results of the present study, that people with DM present sociodemographic, clinical and laboratorial characteristics that predispose them to high risk of morbidity and mortality, such as low educational level and purchasing power, high risk for cardiovascular complications, long time living with the disease, non-adherence to non-pharmacological treatment, prevalence of complications, lack of knowledge regarding health status, lipid and glycemic decompensation, as well as poor participation in educational actions about DM.

These findings corroborate the importance of education for self-care, since many of the factors identified can be modified when the person with DM has knowledge about their health-disease process, encouraging a positive attitude towards their care.

Given the knowledge about the profile of patients and the importance of education, nursing professionals need to identify competences and deficits in self-care, in order to make adaptations on their care and educational actions, with an approach that is easily understood and with guidance that corresponds to the reality of the person with DM.

It is also added that, to carry out further studies, such as the ones about educational intervention, prior knowledge of the profile of participants is es-

sential, especially those with DM, because they present strong biopsychosocial influences that interfere directly with adherence to treatment.

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