



## KNOWLEDGE OF USERS ABOUT CHRONIC COMPLICATIONS OF DIABETES MELLITUS

### CONHECIMENTO DE USUÁRIOS SOBRE COMPLICAÇÕES CRÔNICAS DO DIABETES MELLITUS CONOCIMIENTO DE USUARIOS SOBRE LAS COMPLICACIONES CRÓNICAS DE LA DIABETES MELLITUS

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#### ABSTRACT

**Objective:** to assess the knowledge of diabetics in relation to chronic complications associated with diabetes mellitus. **Method:** transversal, quantitative study. The population consisted of diabetics registered in a Basic Health Unit in “Zona da Mata of Pernambuco”, with a sample of 101 diabetics. Data analysis was done through descriptive statistics on relative and absolute values. To collect data, it was used a form and interview technique. Previously, the research project was approved by the Ethics Research Committee, CAAE No 01052212.8.0000.5208. **Results:** 74.25% are female, being 64.35% aged over 60 years and 62.38% with uncompleted Primary School. An index of assertiveness of 73.96% was observed, in relation to questions regarding knowledge about the chronic complications of the disease. **Conclusion:** the knowledge of respondents was considered satisfactory, although errors on areas relevant to the development of complications have been observed. **Descriptors:** Diabetes mellitus; Knowledge; Complications of Diabetes; Nursing.

#### RESUMO

**Objetivo:** avaliar o conhecimento dos diabéticos em relação às complicações crônicas inerentes ao diabetes mellitus. **Método:** estudo transversal de natureza quantitativa. A população foi composta por diabéticos cadastrados em uma Unidade Básica de Saúde da Zona da Mata Pernambucana, com amostra de 101 diabéticos. A análise dos dados se deu por meio da estatística descritiva em valores relativos e absolutos. Para a coleta de dados, utilizaram-se um formulário e a técnica de entrevista. Previamente, o projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, sob o CAAE nº 01052212.8.0000.5208. **Resultados:** 74,25% são do sexo feminino, sendo 64,35% com idade igual ou superior a 60 anos e 62,38% com Ensino Fundamental incompleto. Observou-se índice de assertividade de 73,96% em relação aos questionamentos referentes ao conhecimento sobre as complicações crônicas da doença. **Conclusão:** o conhecimento dos entrevistados foi considerado satisfatório, embora erros em aspectos relevantes para o desenvolvimento de complicações tenham sido observados. **Descritores:** Diabetes mellitus; Conhecimento; Complicações do Diabetes; Enfermagem.

#### RESUMEN

**Objetivo:** evaluar el conocimiento de los diabéticos en relación a las complicaciones crónicas asociadas a la diabetes mellitus. **Método:** estudio cuantitativo transversal. La población estuvo compuesta por diabéticos registrados en una Unidad Básica de Salud de la “Zona da Mata de Pernambuco”, con una muestra de 101 diabéticos. El análisis de datos se realizó a través de la estadística descriptiva en valores relativos como absolutos. Para la recolección de los datos, se utilizó un formulario y la técnica de entrevista. Anteriormente, el proyecto de investigación fue aprobado por el Comité de Ética en Investigación, CAAE No 01052212.8.0000.5208. **Resultados:** 74.25% son mujeres, siendo 64,35% con edad igual o mayor a 60 años y 62.38% con Educación Primaria incompleta. Se observó el índice de la asertividad del 73,96% en relación a las preguntas referentes al conocimiento sobre las complicaciones crónicas de la enfermedad. **Conclusión:** el conocimiento de los encuestados se consideró satisfactorio, aunque se han observado errores en los aspectos relevantes para el desarrollo de complicaciones. **Descriptor:** Diabetes mellitus; Conocimiento; Complicaciones de la Diabetes; Enfermería.

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## INTRODUCTION

Chronic non-transmissible diseases (NTDs) are considered an important public health problem and may be associated with inappropriate lifestyle of people. Among the NTDs, might include cardiovascular diseases, obesity and diabetes, which account for approximately 50% of deaths.<sup>1</sup>

The social determinants of proximal health, coming from lifestyles and behaviors are considered risk factors; these, in turn, are associated with the emergence of NTDs, for example: overweight, physical inactivity, unhealthy diet, smoking, excessive alcohol use, hypertension and others.<sup>2-3</sup> Diabetes mellitus (DM) is considered a multifactorial syndrome that can be explained by the absence or inability of insulin to properly exercise its functions in the body. It is classified into four types: DM type 1, DM type 2, other specific types of DM and gestational DM.<sup>4</sup>

Besides these, there are two classes, referred to as pre-diabetes, which are impaired fasting glucose and impaired glucose tolerance. These are considered risk factors for the emergence of DM and cardiovascular diseases.<sup>5</sup> The DM1 is linked to the destruction of pancreatic beta cells, which are responsible for insulin production in the body.<sup>6</sup> This type of DM normally appears in childhood and comprises from about 5% to 10% of cases of diabetes mellitus.<sup>5</sup> DM2 is explained by the change in morphology of the insulin receptor located on the cell membrane. This type of diabetes affects 90% to 95% of DM patients and is more common in adulthood, and their emergence is related to the lifestyle of the people.<sup>7</sup> The gestational DM (GDM) is established by decreased glucose tolerance. The principle or recognition first appears during pregnancy, and may or may not continue after delivery.<sup>8</sup>

In the class "other DM types", highlights the *Maturity Onset Diabetes of the Young* (MODY), a subtype that affects people under the age of 25 and who are not obese. It is related to the defect in insulin secretion.<sup>8</sup> Considered a disease that affects a large part of the population, it is estimated that approximately 173 million people are affected by it. The number of individuals with DM will reach approximately 366 million in 2030, i.e., more than double of the number registered in 2002.<sup>6</sup>

Among the ten countries with the highest number of cases of diabetes in 2000, Brazil ranked eighth, achieving 4.6 million affected; in 2030, will occupy the sixth place, with 8.9

million people affected by DM.<sup>9</sup> The number of deaths attributed to DM is approximately 800 000 in the world.<sup>5</sup>

The increasing of diabetes prevalence in developing countries has been common in recent decades. DM is considered a disease of great importance, both for its high frequency, and by the fact to lead with complications, whether acute or chronic, compromising the lives of patients.<sup>10</sup> In this sense, the complications of DM2, both micro-vascular as macro-vascular, constitute a major threat to health worldwide, causing large economic and social costs to the country.<sup>6</sup>

Being the DM a disease of great clinical and epidemiological importance, it is necessary that diabetics have knowledge about the disease to prevent the development of these complications. Therefore, it is fundamental to have a change in lifestyle. Thus, the aim of this study is to investigate the knowledge of diabetic patients about chronic complications inherent of diabetes mellitus.

## METHOD

Transversal and quantitative study developed with 101 diabetic patients of a total population of 424 patients registered in Basic Health Unit (BHU) of "Zona da Mata in Pernambuco" in 2012. Respondents were defined for convenience due to low demand of patients in that BHU.

Respondents were chosen randomly, according to the demand of medical care and nursing of BHU. The sample consisted of adults and elderly of both sexes, and the participants were approached in the waiting room of the unit, prior to medical or nursing consultation and through home visits.

The data collection instrument was developed by the researcher, being divided into two stages: the first comprises data identifying the patient, consisting of 31 questions (open and closed) related to sociodemographic and clinical data and the second with the knowledge approach of participants, about chronic complications of diabetes mellitus. Participants answered the form individually, i.e., without interference of the companions or family in the responses.

Each interview lasted on average 20 minutes, being held from April to August 2012. It was emphasized that the collected information, were preserved in secrecy and the identities of the interviewees were preserved. The forms were administered by the researcher, being evaluated and selected during the survey period.

Data analysis was performed in Excel/2007 program. Then were processed in EPIINFO, using descriptive statistics in relative and absolute values. For statistical analysis, we used the ANCOVA test.

The study was conducted after approval from the Federal University of Pernambuco Research Ethics Committee, as Protocol No.

025/12. All participants were required to signing the Informed Consent Form (ICF).

## RESULTS

With respect to sociodemographic characteristics, most participants had aged 60 years, with a prevalence of women, married people, with low income and low educational levels, as shown in Table 1.

**Table 1.** Sociodemographic characteristics. Vitória de Santo Antão, 2012.

Characteristics	n / %
Sex (n= 101)	
Female	75 (74,25%)
Male	26 (25,75%)
Age (n= 101)	
> or = 60 years	65 (64,35%)
< 60 years	36 (35,65%)
Marital Status (n= 101)	
Single	15 (14,85%)
Married/ Consensual union	44 (43,57%)
Widower	32 (31,68%)
Divorced	10 (9,9%)
Family Income (n= 101)	
1 a 2 Minimum Wages	72 (71,28%)
3 a 5 Minimum Wages	16 (15,85%)
Not informed	13 (12,87%)
Schooling (n= 101)	
Did not studied / Functionally Illiterate	23 (22,77%)
Incomplete Primary School	63 (62,38%)
Complete Primary School	03 (2,97%)
Incomplete High School	03 (2,97%)
Complete High School	07 (6,93%)
Incomplete Higher Education	02 (1,98%)

Table 2 details the results about the knowledge of diabetic patients in relation to chronic complications. The results were categorized into absolute and relative numbers of hits, errors and cases where respondents did not know how to answer the questions.

**Table 2.** Knowledge of diabetic patients in relation to chronic complications. Vitória de Santo Antão, 2012.

Evaluation of knowledge	Yes	No	Do	not know	
	n°	%	n°	%	n° %
1. Do you know which problems that diabetes can cause in your body?	49	48,51	52	51,49	00
2. What are the chronic complications that can occur in diabetic patients?	Hits	Errors	Do not know		
	n°	%	n°	%	n° %
a) Eye problems	99	98,02%	00	0 %	02 1,98%
b) Nerve problems	65	64,35%	11	10,89%	25 24,76%
c) Kidney problems	80	79,20%	03	2,97%	18 17,83%
d) Coronary Arterial Disease	67	66,33%	06	5,95%	28 27,72%
e) Cerebrovascular Accident	73	72,27%	10	9,9%	18 17,83%
f) Peripheral Vascular Disease	74	73,26%	06	5,95%	21 20,79%
g) Heart Failure	71	70,29%	09	8,92%	21 20,79%
h) Blood vessels problems	70	69,3%	08	7,92%	23 22,78%
i) Foot problems	82	81,18%	10	9,9%	09 8,92%
j) Heart problems	66	65,34%	13	12,87%	22 21,79%
<b>Total</b>	<b>747</b>	<b>73,96%</b>	<b>76</b>	<b>7,52%</b>	<b>187 18,52%</b>
3. Which are the risk factors for the emerging of chronic complications?	n	%	n°	%	n° %
a) Age > 40 years	93	92,07%	02	1,98%	06 5,95%
b) Hypertension	93	92,07%	02	1,98%	06 5,95%
c) Retinopathy	06	5,95%	87	86,13%	08 7,92%
d) Diabetics > 10 years	92	91,09%	01	0,99%	08 7,92%
e) Kidney	10	9,9%	78	77,22%	13 12,88%
f) Obesity	91	90,09%	03	2,97%	07 6,94%
g) Alcoholic	95	94,06%	01	0,99%	05 4,95%
h) Smoker	92	91,08%	02	1,98%	07 6,94%
i) Dyslipidemia	94	93,06%	00	0%	07 6,94%
j) Cardiovascular Disease	86	85,15%	05	4,95%	10 9,9%
<b>Total</b>	<b>752</b>	<b>74,45%</b>	<b>181</b>	<b>17,92%</b>	<b>77 7,63%</b>
4. What are the factors for the development of diabetic foot?	n°	%	n°	%	n° %
a) To wear open shoes	46	45,55%	33	32,67%	22 21,78%
b) To cut the nails properly	65	64,36%	29	28,71%	07 6,93%
c) Presence of cracks or calluses	87	86,14%	07	6,93%	07 6,93%
d) Decrease of articulation movement	81	80,20%	01	0,99%	19 18,81%
e) Walking barefoot	84	83,17%	12	11,88%	05 4,95%
f) Reduced sensibility	86	85,15%	04	3,96%	11 10,89%
g) To wear closed shoes	26	25,75%	60	59,40%	15 14,85%
h) To wear tight shoes	89	88,12%	04	3,96%	08 7,92%
i) Presence of cracks or ulcers	96	95,05%	02	1,98%	03 2,97%
j) Deformities or pressure areas	81	80,20%	10	9,9%	10 9,9%
<b>Total</b>			<b>741</b>	<b>73,36%</b>	<b>162 16,05%</b>

When analyzing the educational level and duration of illness, influence on the number of hits, it was found that the results were not significant at a significance level of 0.05, using the ANCOVA test.

## DISCUSSION

Regarding sociodemographic variables, it was found a predominance of females, with 75 cases (74.25%); 72 (71.28%) of respondents had a family income between one and two minimum wages. As for education, we found a predominance of incomplete Primary Education, 63 (62.38%) respondents; however, a study conducted in Ribeirão Preto/SP revealed a high level of education by the study population, which probably contributed to the aid of early diagnosis.<sup>9</sup>

Low educational level is a variable that influences the access to information regarding the understanding of the disease and its treatment, limiting learning and consequently, harming health care.<sup>10</sup> As to age, there was a predominance of users aged over 60 years, representing 65 respondents (64.35%).

In Brazil, the multifactorial study of prevalence of diabetes mellitus showed that its frequency increases steadily after age 50. This study also noted that diabetes mellitus is a public health problem, by relating the progressive trend of aging population.<sup>11</sup>

Moreover, in this study, it was found that users' knowledge about the chronic complications of the disease was assessed as satisfactory, with 747 (73.96%) correct answers by the interviewees. The same happens with the knowledge of diabetes in relation to risk factors for development of chronic complications, where it was noticeable a good knowledge with 752 (74.45%) correct answers. When compared with the risk factors for developing diabetic foot, there is also a satisfactory knowledge with 741 (73.36%) correct answers by the interviewees.

Accordingly, a survey in Londrina/PR and major metropolitan region, with the aim of analyzing users' knowledge about diabetes mellitus, showed a satisfactory result, in which eight of the interviewees had presented a good knowledge of the disease, yet only

two, known differentiate their complications.<sup>12</sup>

Consistent with the above results, the study in Teresina/PI, with the aim of describing the knowledge of diabetes mellitus carriers about complications of the disease, found that the knowledge of the respondents about the complications of DM is satisfactory, because most of them responded to questions about their knowledge consistently.<sup>7</sup>

Another survey in the inner city of São Paulo, found an increased knowledge about the disease by patients with diabetes after one year of participation in a program of diabetes education. Nevertheless, it was observed that, even with a good score for knowledge about diabetes and self-care practice, participants did not transform the costumes to more adequately cope with the disease<sup>13</sup>; however, the results of another study conducted in the city of Cabedelo/PB, aiming to verify the knowledge of diabetes as preventive measures to lower limb injuries, shows that the knowledge gained by the research population is insufficient, leaving it susceptible to changes of practice in relation to disease control.<sup>14</sup>

Similar results were observed in a transversal study with 79 users, conducted in a basic health unit (BHU) of Ribeirão Preto/SP, where the results showed unsatisfactory levels regarding knowledge of DM.<sup>11</sup> However, in another study conducted in Erechim/RS, it was observed that not all diabetic patients are adequately informed about what is the disease, their care and their complications. Several complications of DM were cited by respondents, but it is not always possible to perceive the existence of care to prevent them.<sup>15</sup>

It is worth mentioning that the result of knowledge of diabetes in relation to risk factors for the emergence of the diabetic foot, in this study, was satisfactory, but in disagreement, the study conducted in the city of Cabedelo/PB, noted insufficient knowledge to keep a control of the disease by this population.<sup>14</sup>

Therefore, it is fundamental to develop teaching activities, as well as educational health practices that are related to diabetes and their families, in order to prevent complications through empowerment for self-care, which enables users to better living with the disease.<sup>16</sup>

## CONCLUSION

In general, the knowledge of the respondents was satisfactory, although there are errors in some aspects considered relevant

to health and the development of possible complications of DM. It is important to consider that the prevention of complications is linked to the change in lifestyle, the information received and the practice of self-care.

This study showed that the knowledge of diabetic patients about aspects covering the chronic complications of diabetes, as well as the risk factors for the emergence of these complications was enough, but there is a need for studies that correlate the knowledge of customers to appropriate disease control. Moreover, it is very important that health professionals acting through interventions at all levels of care, especially in diabetes education programs, through groups, home visits and educational activities, since these actions are part of the basic health care.

It is expected that the results of this study encourage the development of other research, in order to confront these results, besides contributing to changes in current healthcare practice.

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