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Caring for those who care: Assessment of Neuropathy and Prevalence of Diabetes Mellitus 2

Cuidando a los que cuidan: Evaluación de la neuropatía y la prevalencia de la Diabetes Mellitus 2

Cuidando de quem cuida: Avaliação da Neuropatia e Prevalência do Diabetes Mellitus 2

ABSTRACT

Objective: To identify the prevalence of diabetes mellitus 2 (DM2) in caregivers and inspect the feet in self-reported diabetics. **Method:** Quantitative cross-sectional study, probabilistic sampling of convenience in caregivers of special children cared for in a philanthropic institution with the application of a direct questionnaire, in diabetics self-reported by the questionnaire, offered the inspection of the feet following the "Form for Assessment of Neuropathy and Disease Peripheral Arterial - Specialty Clinic" with the instruments: 10g Semmes-Weinstein monofilament, 128Hz tuning fork, reflective hammer. **Results:** There was a prevalence of 23.7% diabetics in the public of 114 respondents. During inspection, it was identified: dry skin, fissures, ringworm, altered skin color, dilated dorsal vessels and edema. **Conclusion:** We observed the problem of a local reality in a philanthropic institution, the data are not generalizable. The need for screening and intervention strategies focusing on primary care and self-care is evident in order to avoid amputations and other injuries resulting from DM2.

DESCRIPTORS: Diabetic Neuropathies; Diabetes Mellitus; Prevalence.

RESUMEN

Objetivo: Identificar la prevalencia de diabetes mellitus 2 (DM2) en cuidadores e inspeccionar los pies en diabéticos autoinformados. **Método:** Estudio cuantitativo transversal, muestreo probabilístico de conveniencia en cuidadores de niños especiales atendidos en una institución filantrópica con la aplicación de un cuestionario directo, en diabéticos autoinformados por el cuestionario, ofrecido la inspección de los pies siguiendo el "Formulario para Evaluación de Neuropatía y Enfermedad Arterial Periférica - Clínica de Especialidades" con los instrumentos: monofilamento Semmes-Weinstein de 10g, diapason de 128Hz, martillo reflectante. **Resultados:** Hubo una prevalencia del 23,7% de diabéticos en el público de 114 encuestados. Durante la inspección se identificó: piel seca, fisuras, tiña, alteración del color de la piel, vasos dorsales dilatados y edema. **Conclusión:** Observamos el problema de una realidad local en una institución filantrópica, los datos no son generalizables. Es evidente la necesidad de estrategias de cribado e intervención centradas en la atención primaria y el autocuidado para evitar amputaciones y otros problemas derivados de la DM2.

DESCRIPTORES: Neuropatías Diabéticas; Diabetes Mellitus; Prevalencia.

RESUMO

Objetivo: Identificar a prevalência do diabetes mellitus 2 (DM2) em cuidadores e inspecionar os pés em diabéticos autorreferidos. **Método:** Estudo quantitativo transversal, amostragem probabilística de conveniência em cuidadores de crianças especiais atendidas em uma instituição filantrópica com a aplicação de um questionário direto, em diabéticos autorreferidos pelo questionário ofertou-se a inspeção dos pés seguindo o "Formulário para Avaliação de Neuropatia e Doença Arterial Periférica - Ambulatório de Especialidade" com os instrumentos: Monofilamento de Semmes-Weinstein de 10g, diapason 128Hz, martelo de reflexo. **Resultados:** Verificou-se a prevalência de 23,7% diabéticos no público de 114 entrevistados. Na inspeção identificou-se: pele ressecada, fissuras, micose, cor de pele alterada, vasos dilatados dorsais e edemas. **Conclusão:** Observou-se a problemática de uma realidade local em uma instituição filantrópica, os dados não são generalizáveis. Evidencia-se a necessidade de estratégias de rastreamento e intervenção com foco na atenção primária e autocuidado para evitar amputações e outros agravos decorrentes DM2.

DESCRIPTORIOS: Neuropatias Diabéticas; Diabetes Mellitus; Prevalência.

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Thalia de Lima Sousa

Nursing Graduate. Universidade Paulista UNIP. Santana de Parnaíba, São Paulo.

ORCID: 0000-0003-0207-8664

Claudia Neves Nascimento da Costa

Nurse. Postgraduate student in Obstetric and Gynecological Nursing at the Albert Einstein Israel Institute of Teaching and Research
ORCID: 0000-0002-5490-4633

INTRODUCTION

Diabetes Mellitus is a chronic metabolic disease whose main characteristic is the increase in glycemic levels, which can be caused by defects related to the action and/or secretion of insulin.¹ Current classifications are type 1, type 2, gestational and other specific types of diabetes mellitus. In type 2 Diabetes Mellitus (DM2) there is insulin resistance, which is when the body produces insulin, but the cells do not use it properly because their actions are reduced and they are not able to effectively carry out hypoglycemia, which collaborates with the increase in blood glucose and is associated with an increase in blood insulin. When in prolonged periods of this condition, there may be damage to organs, blood vessels and nerves.¹ Several risk factors can contribute to the onset of DM2, such as inadequate nutrition, sedentary lifestyle, presence of 1st and 2nd degree relatives, among other factors.² Among the complications of diabetes, diabetic neuropathy is highlighted, which affects about 70% of patients with DM2, this condition is progressive and severe that can lead to ulceration and amputation, in addition to causing painful paresthesia, sensory ataxia and the foot of Charcot.³

Wilson⁴ defines the caregiver as an individual who assumes the essential responsibilities of the patient, who may be a family member or friend. Studies show that the caregiver abdicates self-care to take care of the assisted person,⁵ Dorothea Orem⁶ describes self-care as the human function that individuals perform to meet the essential needs of life and the integrity of their own function and development.⁷ In the context of Children with Special Needs (CWSN), the different health problems and complexity of care require greater attention and monitoring of health services by the

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caregiver, whose individual may have their own quality of life reduced by the provision of frequent care himself.⁸

The worldwide prevalence of diabetes mellitus is alarming, being identified as the fourth leading cause of death and one of the most common non-communicable chronic diseases.⁹ According to national data from the SBD (Brazilian Society of Diabetes) in 2019,¹⁰ the disease affects 16,8 million people, representing 7,9% of the Brazilian population and is expected to increase to 49 million in 2045. In case of delay in the diagnosis, whether due to a late visit to the health service or delay in care, there is a favoring of greater complications of DM2.¹ In early diagnosis, there is an essential opportunity to perform disease prevention, the patient will be able to seek and implement specific care before the morbidity becomes significant.¹¹

In Brazil, the Unified Health System (SUS) has Primary Health Care as its gateway to health care, where the reception for the prevention and control of DM2 should take place, following the principles of universality, integrality and equity of public actions. It is necessary to track and characterize local health conditions in order to insert prevention and intervention strategies according to the identified needs, at the individual and collective levels.¹²

Health professionals are necessary tools for coping with the disease, with a focus on nurses who are prepared to provide assistance and help with preventive, curative and educational measures.¹³ Health efforts were carried out in a philanthropic institution located in the metropolitan region of São Paulo and it was observed that the postprandial capillary blood glucose values of some caregivers, as well as blood pressure and waist-to-hip ratio were altered, demonstrating a possible correlation with symptoms of metabolic syndrome.

Given the above, two parallel studies were carried out with the following guiding questions: "What is the prevalence of DM2 in caregivers of CWSN attended at a philanthropic institution located in the metropolitan region of São Paulo?"; "What is the prevalence of genetic predisposition to DM2 in these caregivers?"; "For diabetic caregivers, what signs and symptoms can be found on foot inspection?" Thus, the aim of this study was to identify the prevalence of DM2 and inspect the feet of diabetics confirmed in caregivers of CWSN assisted in a charity association located in the metropolitan region of São Paulo.

METHOD

Quantitative cross-sectional study with probabilistic convenience sampling. In this study, prevalence data collection was carried out through a questionnaire applied during the routine visit in the philanthropic institution to caregivers of children with multiple disabilities after the explanation of what it is about and research and collection of the signature of the Term of Free and Informed Consent, from September 2018 to May 2019, with an interval between December and February, with the following questions: "Do you have DM2?"; "How long?"; "Is there anyone else in your house who is diabetic?"; "Is there anyone in your family with diabetes?"; "What is the degree of kinship?"

Caregivers who confirmed they were type 2 diabetics were offered to inspect their feet, following the Foot Care Protocol for People with a Form for the Assessment of Neuropathy and Peripheral Arterial Disease - Specialty Outpatient Clinic completed by the inspector with the instruments: Semmes-Weinstein Monofilament 10g, 128 Hz tuning fork, reflex hammer.¹⁴

The inclusion criteria for the application of the questionnaire were: a maximum of 2 direct caregivers of children and adolescents attended at the philanthropic institution, agreeing to fill out

the questionnaire and have a previously signed Free and Informed Consent Form (FICF), over 18 years old. As an exclusion criterion, individuals who are not

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interested in participating in the research. For participation in the inspection of the feet, the inclusion criteria were: Affirming being type 2 diabetic in the questionnaire, filling out the informed consent form prior to the inspection and being in accordance with the other inclusion criteria for the application of the questionnaire. As an exclusion criterion, individuals who are not interested in participating in the research.

Research approved by the Research Ethics Committee of Universidade Paulista, which receives and evaluates research projects involving human beings, under the number for applying the questionnaire 96788618.3.0000.5512 and for inspection of the feet under the number 97452918.0.0000.5512. The authors ensured that all definitions described in resolution 466/12 were followed.¹⁵

The data obtained were transcribed into the Microsoft Excel 2016 software and prepared with the aid of the Microsoft Word 2016 software. The content was analyzed using Bardin's analysis¹⁶ with the structuring of the steps: prior analysis, the first step in which the collected data are subjected to further study; analytical description, which is the classification of each data obtained and its topics that intersect with its objectives; inferential interpretation, relating the results obtained with the reality studied.

RESULTS

The questionnaire was applied to 114 caregivers and the inspection was carried out in 27 diabetic caregivers. The results obtained through the questionnaire were analyzed as shown in Chart I.

As for the assessment of diabetic feet, the 27 patients with the disease consented to participate and among them 42,9% reported leg pain and 57,1% asymptomatic. The neuropathy score identified in caregivers: score 1 in 21,4%, score 2 in 7,1%, score 3 to 5 in 14%.

The inspection of the feet showed 48% dry skin and fissures, 40% calluses, 37% nail or digital mycosis, 7,4% abnormal skin color, 11% dorsal dilated vessels, 11% edema.

DISCUSSION

In this study, the self-reports of caregivers about having diabetes or not were presented through the questionnaire and it was possible to identify the report of the disease more frequently in women aged 41 to 55 years and genetic predisposition in first-degree relatives in 55,25 % of respondents. The results obtained from self-reported DM2 of 23,68% were even higher than those published by the Brazilian Society of Diabetes¹⁰ (SBD) in 2019 (7,9% prevalence) but they are in agreement when comparing the analyzed gender, such that it shows that diabetes affects more women. The prevalence of involvement in women with DM2 is not consensual in the studies, when separated by gen-

der by SBD 10 in diagnosed by the Oral Glucose Tolerance Test, the dominant prevalence in males is identified.¹⁰ As it is self-report, it can be related to their greater demand for health services.¹⁷ As for the prevalent age identified from 41 to 55 years in female caregivers, it is compared with data from the SBD,¹⁰ it is identified that age is in divergence as the prevalence of the disease on this basis refers to 65 years or above.

Changes in the feet demonstrate the ineffective self-care of caregivers that can lead to serious consequences for these individuals,¹⁸ among the findings of the inspection of the feet of self-reported diabetic caregivers following the instrument of the Foot Care Protocol for People with a Form for the Assessment of Neuropathy and Peripheral Arterial Disease – Specialty Outpatient Clinic 14 stand out: dry skin and fissures (48%), calluses (40%), nail or digital mycosis (37%) followed by abnormal skin color (7.4%), dilated dorsal vessels and edema (11%). The scores

entered in diabetic caregivers were: score 1 in 21,4%, score 2 in 7,1%, score 3 to 5 in 14% who need periodic evaluation and scheduling between appointments of one to twelve months.¹⁹ The prevalence of dry skin and cracks can be explained by the fact that dryness makes the skin susceptible to cracks, leading to the loss of the skin's protective barrier and making it more susceptible to the entry of microorganisms, resulting in infectious conditions. Although there were no findings of ulcers in the participants, prevention is essential because 85% of amputations in diabetics are due to ulcers.¹⁹

It is estimated that in Brazil there are about 200.000 caregivers who need to clarify their doubts and expose their anxieties, because, in this way, it is possible to develop actions that better guide them in patient care.¹⁹ It highlights the importance and need for health professionals to guide caregivers about foot inspection practices with the transmission of information in an accessible way

Chart I – Enumeration of the results obtained through the questions presented in the methodology

QUESTIONS	AVERAGE ANSWER	N	%
Do you have type 2 diabetes mellitus?	No	87	76,32%
If so, how long ago?	2 to 3 years	15	13,16%
Is there anyone else in your house who is diabetic?	Yes	56	49,12%
Is there anyone in your family with diabetes?	Yes	73	64,04%
What is the degree of kinship?	1st Grade (fathers and/or mothers)	63	55,26%

Source: Sousa TL, Costa CNN. UNIP, SP, 2020.

Chart 2 - Patients with Diabetes Mellitus separated gender and age, indicating quantity, percentage and total. Santana de Parnaíba, São Paulo, Brazil, 2019.

GENDER OF DIABETIC CAREGIVERS	AGE	N	%
Female	25 to 40 years	6	22,22%
	41 to 55 years	9	33,33%
	56 to 70 years	6	22,22%
Male	25 to 40 years	2	7,41%
	41 to 55 years	3	11,11%
	56 to 70 years	1	3,70%
Total		27	100%

Source: Sousa TL, Costa CNN. UNIP, SP, 2020.

that involves demonstration and supervision of practices.¹⁸ Adherence to foot care should be suggested, including daily inspection, moisturizing the skin, cutting nails and not removing calluses, among other specifics, such as looking for a professional if they find cracks, blisters, ulcers, interdigital mycosis, edema, hyperemia and onychomycosis.¹⁹ As a priority, the Family Health Strategy is one of those responsible for actions to promote, protect and restore health.¹⁸

It is noteworthy that this study focused on the prevalence of DM2 and the inspection of the feet of caregivers with self-reported diabetes, thus the results reveal a problem of a local reality and in a single institution, the data are not generalizable. Further research with more

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institutions is suggested to assess this worrying issue more broadly.

CONCLUSION

This study allowed the assessment of diabetic feet and the identification of the prevalence of DM2 in caregivers of children and adolescents with multiple disabilities from a philanthropic association through the questionnaire. There was a worrying prevalence of the disease and several changes in the feet of diabetics. In this context, the proposed proposal of this study is to expand the institution's care beyond the patients served, also including their caregivers. There is a great need for intervention through actions in municipal strategies focused on primary care and family health strategy. ■

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