e-ISSN 1980-5918
Fisioter. Mov., Curitiba, v. 30, n. 4, p. 813-819, Oct./Dec. 2017

DOI: http://dx.doi.org/10.1590/1980-5918.030.004.AO17

Lower limb self-care among diabetic insulin users

O autocuidado de membros inferiores entre usuários diabéticos insulinizados

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Abstract

Introduction: Lower limb neuropathy is one the complications of diabetes mellitus and the most common cause of lower limb amputation. Hence information and self-care advice should be provided to primary healthcare patients to prevent this condition. **Objective:** To explore insulin users' knowledge of foot self-care. **Methods:** This quantitative, descriptive, exploratory study was conducted at a Family Health Unit Curitiba-PR of Curitiba, PR, Brazil. The study sample comprised 63 insulin users. Data were collected through a structured questionnaire. **Results:** Although they reported performing self-care activities, 67% (n = 42) of insulin users declared that they had never received any information on foot self-care. **Conclusion:** The adherence to self-care practices shown by respondents and the patient empowerment observed in this study indicate the effectiveness of the information on diabetes self-care imparted to patients registered at this health care unit in contributing to the promotion of quality of life.

Keywords: Diabetes Mellitus. Diabetic Foot. Health Knowledge, Attitudes, Practice. Primary Prevention.

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Resumo

Introdução: *A neuropatia de membros inferiores é uma das complicações do Diabetes Melittus e também a maior causa de amputação dos membros inferiores. Neste sentido, a orientação para o autocuidado deve ser enfatizada na abordagem ao usuário da atenção primária, com vista à prevenção deste agravo.* ***Objetivo:*** *Identificar o conhecimento de usuários acerca da prática do autocuidado com os pés.* ***Métodos:*** *Pesquisa de abordagem quantitativa, descritiva e exploratória realizada em uma Unidade de Saúde inserida no Programa de Saúde da Família situada no município de Curitiba-PR. A amostra consistiu em 63 usuários e a coleta de dados se procedeu por meio de aplicação de questionário estruturado.* ***Resultado:*** *Verificou-se que 67% (n = 42) dos usuários não recebem a informação sobre os cuidados com os pés, embora indicaram em suas respostas realizar o autocuidado.* ***Conclusão:*** *Observou-se adesão à prática e empoderamento dos usuários, o que sugere a efetividade da informação passada por esta Unidade de Saúde relacionada ao autocuidado do diabético, o que acarreta em promoção de qualidade de vida do indivíduo.*

Palavras-chave: *Diabetes Mellitus. Pé Diabético. Conhecimentos, Atitudes e Prática em Saúde. Prevenção Primária.*

Introduction

Self-care is the practice of activities that individuals perform for their own benefit, in order to maintain life, health and well-being. It means being active in care and according to medical guidelines. Self-care is related to a person's abilities, limitations and values, as well as to cultural and scientific rules. It is a personal behavior that may influence health and is also associated with environmental, social, economic and hereditary factors that are related to health services (1).

In the context of the healthcare network, primary care is the health care level where health professionals are most likely to empower patients for self-care, especially for the prevention of chronic degenerative diseases such as diabetes mellitus (DM). DM is a set of metabolic diseases characterized by hyperglycemia associated with ophthalmologic, renal, nervous, cerebrovascular and cardiac complications, and accompanied by the following symptomatic manifestations: polyuria, polydipsia, polyphagia and involuntary weight loss, fatigue, weakness and lethargy (2 – 4).

Lower limb neuropathy is one of the most common complication of diabetes and is diagnosed 20-25 years after its onset in 50-60% of diabetics. These lesions may evolve into ulcers and even lead to amputations due to loss of foot sensibility and the failure to notice small traumas, callosities and cracks on the surfaces of the feet (5 – 8). According to researchers in the field (9), 10% of diabetics have foot ulcers during their lifespan; and 20-25% of diabetic hospitalizations are related to foot complications (9 – 11).

Complications resulting from diabetic neuropathy can be prevented through self-care and patient adherence to simple measures, such as adequate use of medications, diet control, regular physical activity and preventive foot care (12 – 14). The Caderno da Atenção Básica sobre DM (guidelines on the provision of basic care to diabetics) proposed by the Ministry of Health (2) point out that a multidisciplinary approach is one of the tools for strengthening the bond between health care providers and recipients and improving care effectiveness. It is achieved through the adherence to recommendations that promote patients' autonomy in self-care activities. Monitoring and follow-up of diabetic patients can and must be performed by healthcare teams (2).

In a multiprofessional approach to diabetes, primary care physical therapists perform assessment and follow-up of diabetic foot patients, in addition to evaluating the need for special shoes. Only a few studies report the role of physical therapy in prevention. This may be due to the fact that physical therapy is still only performed when disease is already present, despite guidelines that it should be performed in a preventive manner (15).

Thus, physical therapy is a health science discipline that studies, prevents and treats treats functional kinetic disorders of bodily organs and systems resulting

from genetic modifications, trauma, and acquired diseases. According to the Federal Council of Physical Therapy and Occupational Therapy (Conselho Federal de Fisioterapia e Terapia Ocupacional - COFFITO), physical therapists can work in many different settings; they can work in clinics, in hospitals, in outpatient clinics, in private practices, in rehabilitation centers, in collective health, education and even in the equipment industry. In the context of collective health, physical therapists carry out basic health care activities, and implement institutional, occupational health and health surveillance programs (15). Hence, studies emphasizing their role in multidisciplinary primary health care teams are paramount to create a space for discussion of practices aimed at health promotion and disease prevention.

The World Health Organization (WHO) encourages self-care education as way of preventing and treating chronic diseases, because it facilitates people's involvement in their own care and leads to greater adherence to therapy, minimizing complications and disabilities associated with chronic diseases (1).

Given the above and the relevance of knowing adherence rates to preventive measures against lower limb neuropathy, this study aimed to explore insulin users' knowledge of foot self-care, in order to allow the health care team, and especially physical therapists, to plan and implement health care actions to diabetics.

Methods

This quantitative, descriptive, cross-sectional study is part of a research project called "Self-care of diabetic insulin users: a multiprofessional approach". This study was conducted at a Family Health Unit of Curitiba, PR, Brazil. Data were collected between June and November, 2015.

Only patients who were seen at the BHU and met the following inclusion criteria were enrolled: having a diagnosis of diabetes; being on an insulin regimen using regular and neutral protamine Hagedorn (NPH) insulin; having collected insulin directly from the unit between January and December 2014; being 18 years of age or older; having performed laboratory tests (fasting plasma glucose and glycated hemoglobin) up to three months prior to research participation; and giving formal consent by signing an informed consent form.

The exclusion criteria were being bilateral amputees, giving a negative answer to one of the items aforementioned, and not signing the informed consent form. This study was approved by the Research Ethics Committee of the Faculdade Pequeno Príncipe (protocol number: 1.209.444) and by the Research Ethics Committee of the Municipal Health Office (protocol number 1.211.143). The target population of the study was 204 diabetics seen at the Health Unit. After inclusion and exclusion criteria were applied, 63 patients were available for study.

The data were collected using a structured questionnaire divided into two parts: sociodemographics and self-care behaviors. The latter was based on an instrument by Cosson (16). The multiple choice questions were designed to assess self-care behaviors. They comprised the following items: walking barefoot, doing foot soaks, wearing socks with closed toe shoes, drying between toes, moisturizing feet, moisturizing between toes, presence of onychomycosis and/or interdigital mycosis, skin cracks or calluses on feet, checking feet for abnormalities, inspecting shoes before wearing them, receiving professional advice about foot care, believing or not in a link between glycemic control and the development of foot problems. One self-reported question assessed participants' toenail shape and had two answer choices: round or square. The data obtained were entered in an Excel® spreadsheet and analyzed using descriptive statistics.

Results

Of a total of 63 participants, the majority were female (68%; n = 43), married (56%; n = 35), aged 56-65 years (36%; n = 23), retired (51%; n = 32) and functionally independent (71%; n = 45).

When asked about foot self-care behaviors, 89% of participants reported drying interdigital spaces after showering or whenever they feel moist or humid; 63% reported routinely moisturizing their feet; 87% had no skin cracks on their feet; 84% had no calluses; 68% checked their feet for abnormalities daily; and 76% inspected their shoes before wearing them.

Sixty-seven percent of participants reported having received no advice from health professionals about foot care, while 84% believed in the link between glycemic control and the development of foot problems.

Table 1 - Characterization of insulin-dependent diabetics seen at a healthcare unit. Curitiba, Brazil, 2015

		Number of participants	Percentage
Gender	Female	43	68.25%
	Male	20	31.75%
Marital status	Married	35	55.56%
	Single	6	9.52%
	Windowed	14	22.22%
	Divorced	4	6.35%
	Stable civil union	4	6.35%
Age	Up to 25 years	1	1.59%
	26 - 35 years	0	0%
	56 - 45 years	3	4.76%
	46 - 55 years	18	28.57%
	56 - 65 years	23	36.51%
	Over 66 years	18	28.57%
Ocupation	Inserted in the work market	17	26.98%
	Not inserted in the work market	14	22.22%
	Retired	32	50.79%
Level of dependence	Independent	45	71.43%
	Mildly dependent	17	26.98%
	Severely Dependent	1	1.59%

Note: Source: the authors (2015).

Table 2 - Adherence to foot self-care as reported by diabetics seen at a healthcare unit. Curitiba, Brazil, 2016

Foot care	Yes N (%)	No N (%)
Walking barefoot	8 (12.70%)	55 (87.30%)
Foot soaks	20 (31.75%)	43 (68.25%)
Wearing socks with closed to shoes	44 (69.84%)	19 (30.16%)
Drying between toes	56 (88.89%)	7 (11.11 %)
Moisturizing feet	40 (63.49%)	23 (36.51%)
Moisturizing between toes	36 (57.14%)	27 (42.86%)
Onychomycosis and interdigital mycosis	15 (23.81%)	48 (76.19%)
Skin cracks on the feet	8 (12.70%)	55 (87.30%)
Calluses	10 (15.87%)	53 (84.13%)
Inspects feet daily for abnormalities	43 (68.25%)	20 (31.75%)

(To be continued)

(Conclusion)

Table 2 - Adherence to foot self-care as reported by diabetics seen at a healthcare unit. Curitiba, Brazil, 2016

Foot care	Yes N (%)	No N (%)
Inspects shoes before wearing them	48 (79.19%)	15 (23.81%)
Professional advice	21 (33.33%)	42 (66.67%)
Link between diabetes and footproblems	53 (84.13%)	10 (15.87%)
Foot care	Round shape N (%)	Square Shape N (%)
Toenail cutting shape	50 (79.37%)	13 (20.63%)

Note: Source: THE AUTHORS (2015).

Discussion

In this study, 68% (n = 43) of participants were female. This result agrees with the study conducted by Laurino, in which females demonstrated greater adherence to self-care behaviors than males (17). Regarding the level of functional independence, 71% (n = 45) of the sample was functionally independent, which facilitates adherence to self-care behaviors (1, 18, 19).

According to the Guidelines for Care of People with Type 2 Diabetes Mellitus (Diretriz de atenção à pessoa com Diabetes Melito Tipo 2, in Portuguese) (20), the main method for detection of neuropathy is the periodic screening of diabetics at the time of diagnosis or an enrollment in the program of care for people with diabetes at the health care unit. At the unit, patients are frequently assessed and their needs - from a simple advice to a referral to specialized services - are met.

Ulcers are the most common foot injuries in diabetic patients and may lead to consequences such as amputation. Trauma-associated factors, skin irritation, inadequate shoes, foreign bodies in the feet, improper toenail cutting, scald injury from hot bath or shower water and/or foot soak lead to an increase in the frequency of diabetic foot and, consequently, to a greater risk of amputation (16).

This study found that diabetics followed correct foot care practices. This indicates the effectiveness of prevention efforts of the healthcare team of this unit or maybe an expertise or social knowledge acquired through social interaction and the watching of peers.

This study found that 87% (n = 55) of participants did not walk barefoot; 68% (n = 43) did not have foot soaks; 76% (n = 48) reported having no foot irritations such as dermatomycosis or onychomycosis;

87% (n = 55) had no skin cracks on their feet; and 84% (n = 53) had no calluses on their feet.

Before putting a closed shoe on, a wearer should inspect it for any objects or features that, in constant contact with the feet (due to their reduced/lost sensibility), could lead to trauma or skin irritation (16, 21). We found that 76% (n = 48) of respondents habitually inspected their shoes before wearing them.

Improperly cutting toenails excessively deep and in a round shape may lead to onychocryptosis (ingrown toenail), which is the growing of the nail into the soft tissue around it. In this study, we found that 79% (n = 50) of participants cut their toenails in this shape (22). This may be due to lack of understanding. Patients should be instructed to avoid cutting their nails in a round shape that leaves rough edges and can result in ingrown toenail. However, due to biological diversity and the fact that nails and toes shapes differ from person to person, the shape of the cut may not be correctly perceived. When examining patients at their practices, physical therapists should take a look at their toenails and advise patients to cut them properly.

Hygiene and cleaning, such as drying the feet and interdigital spaces thoroughly after washing to prevent mycosis, should be part of daily care. In this study, 89% (n= 56) of participants reported doing so. In addition, we found that 63% (n = 40) of respondents moisturize their feet. This is beneficial because it prevents skin cracks and calluses. Nevertheless, 57% (n = 36) of participants reported that they also moisturize between toes, which may lead to mycoses that are hard to heal (12, 21). It is also recommended that diabetics wear socks with closed toe shoes, since it prevents the occurrence of lesions. In this study, 70% (n = 44) of participants reported wearing them regularly (9).

It is expected that, during consultations and educational events, patients are advised by health professionals to inspect their feet daily for abnormalities. This study found that 68% of participants inspect their feet daily. This is beneficial for self-care in case of loss of sensibility because it facilitates early detection and treatment of lesions. Patients who are not able to inspect their feet by themselves should be instructed to ask a family member for help or use a mirror (9).

Studies reveal that educational programs reduce the incidence of amputations by 50% (12, 22). Health professionals can help educate patients and change this reality through collective interventions with groups of patients, families and the community. The use of educational practices with an interdisciplinary approach makes these activities more creative and participatory (2, 23 - 26). Notwithstanding, although 67% (n = 42) of respondents reported not receiving any advice on foot self-care, their answers show that they perform self-care behaviors correctly. This finding is supported by the answers given to the question of whether they believed that there was a link between glycemic control and the development of foot lesions. We found that 84% (n = 53) of respondents answered this question with "yes". This indicates that these patients had received advice at some time in the past or had maybe acquired social knowledge through social interaction and the watching of peers.

Diabetic neuropathy is a serious consequence of DM and can result in foot amputation. Diabetic foot is considered the most mutilating chronic complication of diabetes, resulting in social and economic impact. It is estimated that about 15% of diabetics worldwide will at some stage develop foot lesions. The current incidence, however, is about 25% (27, 28).

The work performed by the health care team is capable of improving the analysis potential and intervention in health-related problems in a given territory. The Family Health Support Center (Núcleo de Apoio à Saúde da Família or NASF) is composed of a multiprofessional team that complements the work of basic care teams and tries to answer the concrete needs of patients and socials groups (2).

The work of physical therapists is not restricted to cure and rehabilitation. Disease prevention and health education activities are essential to improve patients' quality of life and home care interventions may contribute to the relationship between patients and their physical and social environments (15).

The insertion of NASF physical therapists in Health Care Units goes beyond the perception of disease. When assessing patients, physical therapists should determine the influence of related factors on disease development and complications, in order to be able to intervene effectively. They can work together with other NASF professionals and create target groups for information and intervention (29, 30).

Conclusion

This study showed that foot self-care practices among diabetic insulin users registered at a health care unit in Curitiba, PR, have positive effects. Although they only represent strategies associated

with the territory of this group, our findings demonstrate the effectiveness of strategies for health promotion and disease prevention among this population.

Despite the limitation of this study regarding the number of respondents, our results show that the health service (in this case the health care unit) plays an important role in empowering patients to promote health and prevent DM-related diseases. They also indicate that the engagement of the health care team in interventions for this population brings positive results. This is especially important in a chronic disease such as diabetes that leads to serious complications and is associated with reduced quality of life.

We highlight the importance of physical therapists in this context. Due to their expertise and knowledge of the importance of preventing diabetic foot complications, and the best procedures to follow based on scientific evidence, they contribute to the effectiveness of health activities targeting this population.

All the members of the health care team, including physical therapists, should be prepared to recognize any obstacles to adherence to self-care and intervene to prevent and/or minimize potential complications of the disease. It is paramount that health professionals continue to seek strategies to motivate individuals to perform self-care activities and overcome eventual barriers to the adoption of preventive measures. Equally important is the dissemination of information to the community during educational, preventive and health promotion activities.

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Received in 02/26/2016
Recebido em 26/02/2016

Approved in 04/04/2017
Aprovado em 04/04/2017