



FEET EVALUATION IN INDIVIDUALS WITH DIABETES CARRIED OUT IN A PRIMARY CARE UNIT

AVALIAÇÃO DOS PÉS EM INDIVÍDUOS PORTADORES DE DIABETES ATENDIDOS EM UMA UNIDADE DE ATENÇÃO PRIMÁRIA

EVALUACIÓN DE LOS PIES EN INDIVIDUOS PORTADORES DE DIABETES ATENDIDOS EN UNA UNIDAD DE ATENCIÓN PRIMARIA

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ABSTRACT

Objective: to identify the prevalence of lesions and risk of developing lesions among patients with diabetes mellitus who are assisted by a Family Health Strategy/ESF. **Method:** descriptive, exploratory study with a quantitative approach, carried out in the coverage area of a Family Health Strategy of Diamantina/MG with 31 individuals with diabetes mellitus. The data collection was an interview and physical examination of the feet. Data were analyzed by mean, proportion and absolute numbers in the Microsoft Excel 2007 program. **Results:** 64.5% female, mean age 62.7±15.07 years old and 83.8% of less than 7 years of study; 80.6% hypertensive. The evaluation of the feet showed cracks (35.5%), dry skin (29%), thickened nails (19.4%), hallux valgus (12.9%), presence of callus (6.5%), and decreased sensitivity (6.5%). **Conclusion:** there was a risk for lesions and factors favoring them, suggesting the need for activities to prevent this complication, including periodic foot evaluation and educational activities. **Descriptors:** Diabetes mellitus; Diabetic Foot; Primary Prevention; Risk Factors.

RESUMO

Objetivo: identificar a prevalência de lesões e risco para desenvolver lesões entre portadores de diabetes mellitus atendidos por uma Estratégia de Saúde da Família/ESF. **Método:** estudo descritivo, exploratório, de abordagem quantitativa, realizado na área de abrangência de uma Estratégia de Saúde da Família da Diamantina/MG com 31 indivíduos portadores de diabetes mellitus. A coleta de dados foi realizada por meio de entrevista e exame físico dos pés. Os dados foram analisados por média, proporção e números absolutos no programa Microsoft Excel 2007. **Resultados:** 64,5% dos participantes eram do sexo feminino, média de idade de 62,7±15,07 anos e 83,8% com escolaridade inferior a sete anos de estudo; 80,6% hipertensos. Na avaliação dos pés, observou-se: rachaduras (35,5%), pele ressecada (29%), unhas espessadas (19,4%), halux valgo (12,9%), presença de calos (6,5%) e sensibilidade diminuída (6,5%). **Conclusão:** percebeu-se risco para lesões e fatores que as favorecem, sugerindo a necessidade de atividades de prevenção dessa complicação incluindo avaliação periódica dos pés e atividades educativas. **Descritores:** Diabetes Mellitus; Pé Diabético; Prevenção Primária; Fatores de Risco.

RESUMEN

Objetivo: identificar la prevalencia de lesiones y riesgo para desarrollar lesiones, entre portadores de diabetes mellitus atendidos por una Estrategia de Salud de la Familia/ESF. **Método:** estudio descriptivo, exploratorio, de enfoque cuantitativo, realizado en el area de abrangencia de una Estrategia de Salud de la Familia de Diamantina/MG con 31 individuos portadores de diabetes mellitus. La recolección de datos fue entrevista y exámen físico de los pies. Los datos fueron analizados por media, proporción y números absolutos en el programa Microsoft Excel 2007. **Resultados:** se obtuvo 64,5% sexo femenino, media de edad de 62,7±15,07 años y 83,8% con escolaridad inferior a 7 años de estudio; 80,6% hipertensos. En la evaluación de los pies fue observado: rayaduras (35,5%), piel reseca (29%), uñas espesadas (19,4%), halux valgo (12,9%), presencia de callos (6,5%), y sensibilidad diminuída (6,5%). **Conclusión:** se observó riesgo para lesiones y factores que las favorecen, sugiriendo la necesidad de actividades de prevención de esa complicación incluyendo evaluación periódica de los pies y actividades educativas. **Descriptor:** Diabetes Mellitus; El Pie Diabético; La Prevención Primaria; Factores de Riesgo.

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INTRODUCTION

Diabetes mellitus (DM) has a heterogeneous group of metabolic disorders that share the underlying common characteristic of hyperglycemia, which is the result of a defect in insulin secretion, insulin action or both.¹ The long-term effects of hyperglycemia are associated with macrovascular complications (cerebral vascular disease and peripheral vascular disease), microvascular complications (ocular and renal disease), and neuropathic complications.²

In 2008, the overall prevalence of diabetes was estimated at 10% in adults over 25 years old, with the highest prevalence in the Eastern Mediterranean and the Americas (11% for both genders). The magnitude of diabetes and other glucose tolerance abnormalities are even higher if the categories “impaired glucose tolerance” and “altered fasting glycemia” are included.³ In Brazil, this disease affects an average of 11% of the population with 40 years old or more.⁴

The increase in noncommunicable diseases in low and middle-income countries is related to the negative effects of globalization, unplanned urbanization, and increasingly sedentary life. In these countries, there has been an increase in the consumption of high-calorie foods and people are the target of marketing for tobacco, alcohol and nutrient-poor foods, products that are increasingly accessible.³ Other factors related to the increase in the number of diabetic individuals are the aging population, increasing prevalence of obesity and greater survival of patients with this pathology.¹

Among the several serious and costly complications that affect individuals with diabetes, foot complications account for the most. The International Consensus on Diabetic Foot defines as “diabetic foot” the infection, ulceration and/or destruction of the deep tissues associated with neurological abnormalities and peripheral vascular disease in the lower limbs.⁵

The prevalence of foot ulcers among diabetic people is approximately 4 to 10%. In younger patients with type 1 or type 2 diabetes, prevalence was estimated between 1.7 and 3.3%, and in studies in which most patients are older or have type 2 diabetes, the prevalence was 5 to 10%; 40 to 70% of all lower extremity amputations are related to diabetes mellitus.⁵

The socioeconomic impact of diabetic foot involves expenses with treatments, hospitalizations, physical and social

incapacities such as loss of employment and productivity.⁶ Pain, anxiety and loss of quality of life also have a great impact on the lives of people with this pathology and their families, difficult to quantify.¹

Some high-risk characteristics for diabetic foot development include: diabetes for more than 10 years, age over 40, smoking, decreased peripheral pulses and sensitivity, anatomical deformities, or prior amputation.²

Programs associating foot-specific education, therapeutic shoes, and skin and nail care can significantly reduce the epidemic of diabetic foot diseases.⁷ Education together with regular foot examination and risk classification may reduce the occurrence of injuries in up to 50% of patients.⁵

The five basic points of prevention of diabetic foot are: regular inspection and examination of feet and footwear; identification of the high-risk patient; education of the patient, the family and health professionals; use of appropriate footwear and treatment of non-ulcerative pathology such as calluses, pathological nail changes.⁵

The lack of proposals for prevention of these complications from health education results in high rates of complications and lower limb amputations.^{7,8} also, the management of diabetic feet is complex, requiring the collaboration between patients and health professionals, so that problems can be identified, avoiding the development of complications.⁹ In this context, the need for actions aimed at people with DM, especially for the early identification and prevention of complications is observed. Wounds in the lower extremities of, the lower limbs are a frequent complication, requiring specialized care and significantly interfering with the quality of life of the patient.

OBJECTIVE

- To identify the prevalence of lesions and risk of developing lesions among patients with diabetes mellitus who are assisted by a Family Health Strategy/ESF.
- To characterize patients with diabetes mellitus about demographic, social, clinical history and lifestyle factors.

METHOD

This is a descriptive, exploratory study with a quantitative approach, carried out in the coverage area of a Family Health Strategy (ESF) of the city of Diamantina-MG in individuals with diabetes mellitus. Physical interviews and physical exams of the feet

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were carried out to identify factors related to the risk of developing ulcers in the lower limbs. The project was approved by the Ethics Committee of the Federal University of Vales do Jequitinhonha e Mucuri under number 190/10.

People over 18 years old with diabetes mellitus, enrolled in the ESF, with preserved reasoning and communication skills were included in the study. Among the 40 patients with diabetes mellitus enrolled in the chosen ESF in the city of Diamantina-MG, eight were not found at home at the time of the interview and one person refused to participate. Therefore, the sample consisted of 31 people diagnosed with diabetes mellitus who met the inclusion criteria.

The interview was applied by the researchers and the time for the interview was 20 to 30 minutes. These interviews were conducted at the participants' residence, from March to August 2011.

The interview script, developed from a previous study¹⁰, included demographic data, clinical history, lifestyle and foot care practice. The physical evaluation of the feet included observation of the nail cut, footwear used at the time of the interview, skin moisture, dermatological alterations, presence of deformities, ulcers and amputations and verification of the peripheral pulses.

Footwear was considered adequate when closed, with a wide point (square or round), with a heel up to 5 cm, if a large part of the feet was protected, including sports shoes.¹¹

Semmes-Weinstein monofilament of 10g was used to determine the perception of pressure in both feet, according to the Consensus of the Brazilian Society of Diabetes. It was considered a protective sensation absent when the patient answered, two incorrect questions for every three asked.⁵ The test was performed in seven points of the plantar region of each foot: I, III, and V ankle; I, III and V metatarsal heads and calcaneal region.

The sign of peripheral vascular disease was identified through palpation of the posterior and tibial pedal pulses; it was considered positive when the pulses were not palpable or decreased after 2 evaluations.⁸

The classification of risk for development of foot complications was made as suggested by the Consensus on the Diabetic Foot. This classification involves 4 categories: Category 0: absent neuropathy; Category 1: neuropathy present; Category 2: neuropathy present, signs of peripheral vascular disease and/or

foot deformities and Category 3: amputation/previous ulcer.⁵ The categories 1 and 2 were fewer risks and categories 3 and 4 were of major risk.¹⁰

From the application of the questionnaires, a database was built in the program Microsoft Excel 2007. The data were analyzed by means, proportion and absolute numbers.

RESULTS

The mean age of study participants was 62±15.07 years old. About the gender, 64.5% were female, being retired or homemakers, respectively with 48.4% and 32.4%.

As for education, 54.8% had 4 to 7 years of education, and 29% had less than 4 years of studies. About education, 83.8% of the individuals had less than seven years of study and 29% less than four years.

We identified that 48.4% had 10 to 20 years of diagnosis and the treatment for predominant control is the use of oral hypoglycemic agents. The comorbidity presented by most of the participants was arterial hypertension (80.6%), followed by stroke (12.9%), acute myocardial infarction (9.7%), and 9 individuals presented two or more associated comorbidities. As for the time of diagnosis, there was a variation between 10 and 20 years.

Regarding the life habits of the participants, 54.8% did not practice any diet for control and 61% did not practice regular physical activities. The consumption of alcoholic beverages was reported by 3 participants (9.7%). As to smoking, 2 were active smokers (6.5%) and 7 former smokers (22.6%). It was observed that less than half of the group practiced some regular physical activity or followed a diet to control diabetes. Three participants (9.7%) reported regularly ingesting alcoholic beverages.

We observed that 10 of the participants (32.3%) were not in the habit of evaluating the feet. At the time of the interview, 22 people (71%) used inappropriate footwear and 8 of them (25.8%) presented physical difficulty with foot care.

No participants presented ulceration in the lower limbs, 2 (6.5%) reported previously healed the wound and one had the previous amputation.

Figure 1 shows the risk classification for foot ulceration according to the International Consensus on Diabetic Foot. There was a higher frequency of risk grade 0 (54.8%) and 2 (32.3%) and prevalence of higher risk (grades 2 and 3) of 38.8%, with 32.3% of risk grade 2 and 6, 5% with a degree of risk 3.

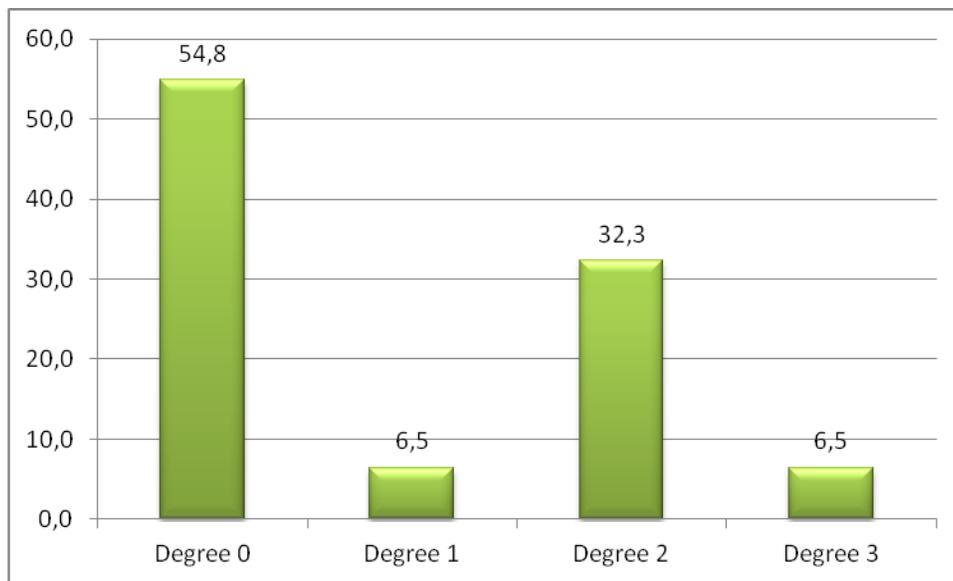


Figure 1. The proportion of patients with diabetes mellitus according to a risk classification for foot ulceration. Diamantina-MG, 2011.

The tibial and posterior tibial pulses were evaluated, and 29% of the participants had at least one of the pulses diminished, and there was no participant with peripheral pulses absent.

Regarding self-care, it was observed that only 32.3% had a habit of evaluating the feet and 25.8% had inadequate nail trim. The proportion of people who used inappropriate shoes at the time of the interview was great.

The results indicated the following changes: cracks (35.5%), dry skin (29%), thickened nails (19.4%), nail fungus or interdigital (16.1%), hallux valgus or hammer fingers (12.9%), presence of callus (6.5%), and decreased sensitivity (6.5%).

DISCUSSION

The mean age of study participants was similar to other studies.^{8,10} Given the increased prevalence of diabetics among people over 40 years old, it is important that health policies ensure health promotion in the age groups most exposed to risk of becoming ill, without losing sight of the other cycles of life.¹¹

A higher proportion of female subjects were also reported in other studies involving diabetics.^{10,12} However, a study carried out to characterize the prevalence of Diabetes Mellitus (DM) in São Paulo found an approximate prevalence among men (8.7%) and women (9.4%), pointing to the increase in the prevalence of diabetes in the male population, due to the active search.⁸

Low education is considered an aggravating factor for the development of complications among diabetics due to limited access to information and compromised understanding of self-care guidelines.¹⁰

A study conducted in Londrina-PR between December 2008 and March 2009 showed that

there is a significant association between an increased risk of ulcers and a diagnosis time equal or greater than 10 years.¹⁰ Another study reports a prevalence of patients with diabetic foot 49.4% among those with a diagnosis time of 10 or more years.⁸

Nutrition, meal planning, and weight management are the basis of diabetes treatment.² Regular physical activity causes improvements in fasting plasma glucose, plasma lipids, and blood pressure reductions.^{13,14} Others authors also reported low adherence to this behavior, 55.2% had difficulty adhering to the diet, and 66.4% of the study participants did not practice physical activity.^{11,15,16}

It should be emphasized the moderation of alcohol consumed by diabetics mainly due to the risk of hypoglycemia. Also, a patient who consumes too much alcohol may have difficulty recognizing and treating hypoglycemia or following a meal plan to avoid it.²

The proportion of smokers found in this study was lower than other studies conducted in Brazil.¹⁰⁻¹ Smoking cessation should be stimulated as a preventive measure and healthy lifestyle since atherosclerotic alterations tend to occur at an earlier age in people with diabetes, and smoking is one of the most important risk factors in the development of this complication.^{2,10}

Hypertension is the main comorbidity associated with diabetes mellitus. The proportion of hypertension associated with DM was also high, as reported by other authors.¹⁰⁻¹ This comorbidity is approximately twice as frequent in people with diabetes compared to those without the disease. Also, up to 75% of cardiovascular diseases in diabetes can be attributed to hypertension. Thus, it is recommended to reduce blood pressure to

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below 130/80 mmHg in people with diabetes and hypertension.¹³

Regarding evaluation of distal pulses, it is important because the absence of perception of these pulses is considered a risk factor for amputation in people with wounds. A study of diabetic patients showed that 53% of the study sample had no palpable pulses and 23.3% had documented cardiovascular diseases.¹¹

In this context, it is the responsibility of health professionals to provide access to information that can promote self-care among DM patients.¹⁰ The educational intervention improves adherence to the use of appropriate footwear and contributes to the future reduction of ulcerations due to peripheral neuropathy.^{17,18}

A study carried out in a Basic Health Unit of the Municipality of Bandeirantes, Paraná, Brazil, with 50 diabetic patients, found that 78% of the patients reported not knowing what was a diabetic foot and, therefore, the need for self-care.¹¹ This fact points to the need for health education to avoid complications and to promote quality of life.

Skin dryness and cracking may be a consequence of the total or partial reduction of sweat secretion present in autonomic neuropathy. However, thickening of the nails is often related to fungal infections and can cause severe trauma to adjacent toes. Care should also be taken with fungal infections as they are a gateway to serious infections. Sensitivity loss is related to the repetitive trauma caused by walking and may not be perceived. This leads to callus formation, which in turn acts as foreign bodies on the surface of the skin causing local skin pressure to rise and ulcer formation.⁵ Such problems can be identified early by physical examination of the feet preventing major complications through proper management.

The presence of ulcer or prior amputation rates the patient as a risk grade. In this study, one person had a history of amputation and two had a previous history of injury. The Consensus on the Diabetic Foot suggests for these cases, evaluation of the feet by a health professional in the interval of 1 to 3 months. Such patients should also be instructed in daily foot inspection, proper hygiene, and drying, wearing comfortable shoes, cutting nails and paying attention to the occurrence of blisters, cuts or injuries by communicating to the health team.⁵

Risk levels 0 and 2 prevailed. Similar data were found in the city of Londrina (PR), but with a lower proportion of DM patients with higher risk (grades 2 and 3), being observed a

higher risk frequency among males, age group of 60 years old and over and with low education.¹⁰

It is recommended that educational activities related to foot care be implemented, especially in the higher risk categories. Unfortunately, the examination of the feet is almost always neglected. Foot-and-mouth disease recognition is an important responsibility of the health professional and can avoid the most serious complications.⁵

CONCLUSION

This study pointed out that the risk to develop complications in this sample was 32.3% of subjects with grade 2 and 6.5% in grade 3. Also, low education may contribute to increasing the chance of later complications.

This work reinforces the importance of differentiated care for patients with DM. There is a need for educational activities that stimulate, above all, the practice of physical activities, adherence to diet and self-care with feet. It is important that systematic attention to complication prevention also occurs, including periodic evaluation of the feet by a health professional.

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