

DIABETIC FOOT: THE IMPORTANCE OF ADHESION TO PHARMACOTHERAPEUTIC TREATMENT FOR PREVENTION OF DIABETES COMPLICATIONS

PÉ DIABÉTICO: A IMPORTÂNCIA DA ADESÃO DO TRATAMENTO FARMACOTERAPÊUTICO NA PREVENÇÃO DAS COMPLICAÇÕES DA DIABETES

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ABSTRACT

Introduction: the World Health Organization estimates that more than 180 million people have diabetes worldwide, and this number is likely to be more than double by 2030. In this scenario, Brazil will have a population of approximately 11.3 million diabetics, possibly reaching 23.3 million people with diabetes by 2040. **Objective:** describing the importance of adherence to pharmacotherapeutic treatment in preventing complications associated with diabetic foot patients. **Materials and Methods:** this is a literature review. The search was made in Google Scholar databases, SCIELO, VHL, LILACS. Thirty-seven articles were used between the publication period from 2011 to 2019. Respecting the inclusion criterion, which is works with themes relevant to the research in question, prioritizing keywords such as amputation, diabetes, patient, foot, and ulceration. **Conclusion:** the importance of therapeutic adherence of sync with the multidisciplinary team followed by the co-participation of family members in this process. However, the adoption of simple measures such as daily activities such as exercising regularly, eating, and other non-medicated prophylactic measures are the most recommended.

Keywords: adhesion; complications; diabetes; treatment; diabetic foot.

RESUMO

Introdução: a Organização Mundial da Saúde estima que mais de 180 milhões de pessoas têm diabetes no mundo, e este número será provavelmente maior que o dobro em 2030. Nesse cenário, o Brasil terá uma população de aproximadamente 11,3 milhões de diabéticos, podendo chegar a 23,3 milhões de indivíduos com diabetes em 2040. **Objetivo:** descrever a importância da adesão ao tratamento farmacoterapêutico na prevenção das complicações associadas aos clientes com pé diabético. **Materiais e Métodos:** trata-se de uma revisão bibliográfica. A busca se deu nas bases de dados Google Acadêmico, SCIELO, BVS, LILACS. Utilizou-se 37 artigos entre o período de publicação de 2011 a 2019. Respeitou-se o critério de inclusão de trabalhos com temas relevantes à pesquisa em questão, priorizando as palavras-chaves: amputação, diabetes, paciente, pé e ulceração. **Conclusão:** ressalta-se a importância da adesão terapêutica em sincronia com a equipe multidisciplinar seguida da coparticipação de familiares neste processo. Entretanto, a adoção de medidas simples como atividades cotidianas, tais como: fazer exercícios regularmente, alimentação e, dentre outras medidas profiláticas não medicamentosas, são as mais recomendadas.

Palavras-chave: adesão; complicações; diabetes; tratamento; pé diabético.

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INTRODUCTION

Diabetes mellitus (DM) is considered a metabolic disorder that integrates a group of metabolic diseases characterized by a high level of persistent glucose (hyperglycemia). The progression of the disease generates acute metabolic complications and vascular neuropathic disorders¹.

Diabetic foot is a common complication in patients with diabetes mellitus, which originates from problems of several susceptible areas of the disease, such as nerves, skin, vessels, and skeletal-ligament muscle system of the feet. These lesions are triggered by a triad of fairly classical pathologies involving neuropathy, peripheral vascular disease, and infections.²

The involvement of the lower limbs is because of the reduction of tactile sensitivity and blood perfusion; therefore, in many cases, people who denote this dysfunction decays the immune system of the body, becoming susceptible to necrosis.³

It is estimated that 85% of cases of lower limb amputations occur because the patient does not adhere to the programs, along with someone in the family, systematically. Given the change in this reality, it is possible to reduce this amputation margin by up to 50%.^{4,5}

It is perceived that, due to the chronic nature and severity of the setbacks of this pathology, therapeutic resources do not only include drug treatment but especially changes in lifestyle, such as: practicing physical activities regularly, giving up cigarettes and alcohol, adopting healthy eating habits, among others. These routines are extremely important for monitoring chronic non-communicable diseases (NCDs), and their secondary adversities, such as diabetes.⁶

Treatment adhering has as a classical definition the extent to which the person's behavior coincides with medical guidance regarding, for example, the use of medication, the follow-up of diets, changes in lifestyle, or the adoption of protective health behaviors.⁷

In this context, the objective of this study is to describe the importance of pharmacotherapeutic treatment in the prevention of complications associated with patients with a diabetic foot.

MATERIALS AND METHODS

This is a literature review with a qualitative approach, thus ensuring fidelity to the results obtained and emphasizing the objective of the research. The research is bibliographic and was elaborated from material already published, consisting mainly of scientific articles made available on the Internet. Regarding the qualitative approach, a relationship between the theme and the method of interpreting the data is sought.

The search for the articles was carried out on internet platforms, especially in the Virtual Health Library (VHL), in the databases (Latin American and Caribbean Literature on Health Sciences (LILACS) and in the Scientific Electronic Library Online (SCIELO), between 2011 and 2019, making it necessary to use 1 article prior to this date, due to its importance of data. The following descriptors were used: adhesion, complications, diabetes, treatment, and diabetic foot.

As search criteria for the articles, we verified those that were available in their entirety in English and Portuguese, which addressed the specific theme of diabetes mellitus and neuropathy. Thus, 44 articles were selected for the first moment and, after reading and abstracts, it was highlighted 30 for literature review.

In view of the selected articles, we chose to exclude those that did not contemplate the specific theme, that is, pharmacotherapeutic treatment in the prevention of diabetic foot.

THEORETICAL REFERENCE

Diabetes Mellitus (DM) and Neuropathy

Diabetes mellitus (DM) is classified according to the etiology of glycemic disorders. Type I diabetes primarily proceeds from the destruction of β pancreatic and tends to ketoacidosis. Type II diabetes results, in general, in insulin resistance or deficiency of its secretions "when less glucose uptake occurs by peripheral tissues, especially muscle and hepatic in answer to insulin action".⁸

Diabetes mellitus has had worldwide growth, compromising the life expectancy of the people, not only due to economic factors but because of the unhealthy habit that is reflected in more developed countries, where the high number of diagnoses stand out.⁹

Type I diabetes (referred to as insulin-dependent) is characterized by the individual not producing the hormone of insulin, resulting from the destruction of beta cells leading to an absolute deficiency of the hormone. While type II diabetes (known as non-insulin-dependent) is characterized by varying degrees of insulin resistance and insufficiency in insulin secretion. In these cases, the individual produces the hormone, however, his body cannot absorb properly, which results in a deficiency, and may reach the hyperglycemic state by insulin resistance.^{10;}
¹¹

Type II diabetes mellitus affects about 90% of cases and, among its complexities, can cause several complications for human health, namely: dysfunctions and insufficiencies in diverse organs such as the renal, cardiovascular, neurological, ophthalmologic system and peripheral neuropathy, popularly known as diabetic foot.¹²

According to Mendes¹³, the World Health Organization estimates that more than 180 million people have diabetes in the world, and this number will probably be more than double by 2030. In this scenario,

Brazil will have a population of approximately 11.3 million diabetics, reaching 23.3 million individuals with diabetes in 2040. In Brazil, a survey showed that 8.4% of teenagers are obese and 20% of them are diagnosed with metabolic syndrome.¹⁴

On the world stage, China has the highest number of people affected by diabetes between 20 and 79 years old, it is estimated that by 2040 people with diabetes can reach around 150.7 million approximately. In India, the expectation is 123 million, and in the United States of America could reach 35.1 million inhabitants who may have diabetes by 2040.¹⁵

Regarding the epidemiological profile in patients proven to have diabetes, females prevail, and the age group is between 51-80 years old. Economic factors are also associated with the pathological disorder, and the average salary of this group is 0 - 1 monthly minimum wage per capita. The data, in the literature on the agenda, also indicate that 68% of patients with diabetes are illiterate and 46% are retired.¹⁶

DM is responsible for numerous vascular complications that compromise the survival of patients. Diabetes is of multiple associations and generally affects the feet under chronic conditions, causing changes in these systems: arterial, venous, lymphatic, muscular, bones, joints, tegumentary system, and nerves.⁵

It is estimated that diabetic patients are 17 times more likely to develop neuropathy and comorbidities such as myocardial infarction; may also have up to 6 times more chances when compared to people who do not have the pathology. Studies show that 50% of diabetic patients have hypertension, from 10% to 15% of the general population. As for cases of nephropathy, the chance of diabetes-related lower limb amputations increased by 40 times. In cases of amputations, 50% occur in the lower limbs due to non-traumatic causes in patients with Diabetes. According to the Ministry of Health (MS), the feet are pointed out as a critical point in necrosis complications.^{17,18}

Diabetic polyneuropathy (DPN), together with deformities and traumas, are determining factors for the so-called "diabetic foot". Aging and obesity also contribute to new cases of diabetic feet in people with this pathology. This situation can be explained by the fact that in old age the wound healing phases have an inflammatory response that reduces collagenous tissue, leaving it much less malleable. The tissue where the scar is found is less elastic, and precisely because it does not circulate enough blood in the fatty tissue so

that it resists bacterial infection, is that the passage of nutrients and cellular elements hinders healing.¹⁹

Many people with diabetes do not understand the risk of simple foot injuries and or even wearing tight shoes, as it is common to lose sensitivity in the feet, and the patient does not understand that this may be a sign that leads to complications tied to extreme cases such as amputations. Diabetic foot is a term used by physicians, with changes, as diagnoses, in the lower limbs (in the feet) resulting from diabetes mellitus.²

Care in pharmacotherapeutic treatment in patients with diabetes

Pharmacotherapeutic is returning to fulfill his role before society, cooperating for the patient's well-being and working so that the patient does not have his quality of life compromised by a preventable problem, resulting from pharmacological therapy. This is a commitment of extreme relevance since adverse drug events are considered an emerging pathology today.¹⁵

In cases of treatments in patients with diabetes, it is essential that the person receives explanations about the importance of drug therapy. In a preliminary way, the aid in systemic control involves therapeutic aspects, having as its beginnings glycemic control and blood pressure (BP) measurement, among others.³

According to Barros et al., (2017), the socioeconomic conditions and lifestyle that the patient leads interfere in the conduct of prevention and the way in which treatment should be done. The dynamics of patients' cases require a differentiated treatment because each case has its respective peculiarities¹⁶.

Romualdo²⁰ (2016) recognizes that the choice for the best treatment varies from the general condition of the patient, severity of the disease, age, other associated diseases, in addition to the patient's self-care capacity. The follow-up of fasting and postprandial glycemia of patients is a fundamental part of the treatment, aiming to frequently observe the need to increase the drug dosage or add others to control the disease.

Insulins and oral antidiabetic drugs such as Sulfonyleureas, Nateglinide, Metformine, Acarbose, and Thiazolidinediones are part of the most widely used drug treatment when some changes in life habits (adequate feeding, weight loss, regular practice of physical activity) no longer control glycemic levels in the body. In this context, clinical pharmaceutical care stands out, which comprises technical-care and

technical-managerial actions, with a main focus on patients with diabetes mellitus.²⁰

Systemic follow-up and medications come as adjuvants according to the specificity of each patient and specific measures such as glucose control, among others. It is essential to periodically evaluate the feet by the patient, thus making it effective in attenuating the diseases of DM II.²¹

Regarding foot care, therapy is a primary measure in the practice of self-care, since diabetes can have infectious complications, causing necrosis of great magnitude. In these cases, amputations can be prevented and/or attenuated with simple measures, such as healthy lifestyle habits, with the insertion of the prevention program that is the pillars behind the treatment program in the evolution of diabetic foot patients.⁹

Amputation of the feet is the most feared consequence of chronic complications of DM. Ulceration affects about 15% of diabetics and is the cause of 6 to 20% of hospitalizations.²²

In the cases of diabetic feet, the interaction of the family and the patient is of paramount importance in the aspect of orientation and rehabilitation. Information on the disease is necessary in order to mitigate the problems arising from the lack of correct information about the clinical situation of patients with diabetes. Scientific studies show that the number of amputations can be reduced by more than 45% of measures are implemented, such as foot inspection of diabetic patients.³

Role of health professionals in the treatment and prevention in diabetic foot cases

The person who is diagnosed with diabetes, often, as much as he receives guidance on the importance of adhesion to appropriate treatment, care and the need to change his daily style to keep or even continue quality of life, does not seem to realize that he has the main role in prevention added to the therapy.¹¹

In the research done by Tavares¹⁸, crucial points of attention were observed in the care of diabetic patients. It is important to highlight the actions of the act of promoting prevention and care for diabetic foot, and also to highlight the importance of ensuring access to all competencies of patient health care. As a rule, humanized and multidisciplinary care is sought in the reception of diabetic patients. Taking into account the importance of the more detailed

examination of the feet of these patients, which are generally neglected by health professionals.

Therapeutic awareness for the treatment of diabetes should involve care among health professionals such as physicians, nurses, pharmacists, nutritionists, among others, and family members, aiming to encourage patients with diabetes regarding their self-care because adhesion to treatment is part of strategic plans in the context of public health.²⁴

Aquino²¹ confirms that conscious insertion in the support of integrative practices of health promotion is possible with simple habits of lifestyle changes; this includes food reeducation and the adoption of physical exercises inherent to the social lifestyle. The multidisciplinary team can contribute by offering relevant guidance on self-care to patients with diabetes.

In this context, the guidelines of the professional teams regarding the treatment of diabetic foot include simple actions of great importance for the quality of life of the patient, such as, for example, the use of comfortable shoes and maintenance of nail cutting without taking the cuticles.²⁵

It is concluded that the identification and treatment of these lesions are important in relation to improving the quality of life of patients. On the other hand, the knowledge of these associations may allow the diagnosis of DM in patients not yet recognized as such and thus lead to the institution of appropriate therapy that will prevent the development of diabetic complications.

However, in the face of more complex orientations, Souza²⁰ ensures that the inevitability of improving health education actions, with regard to practice in the behavior of diabetic people, should seek to stimulate the acceptance of the chronic condition and consequently perceive the relevance of therapeutic treatment.

DISCUSSION

The problem of the diabetic foot has a chronic consequence in the individual's life and has a socioeconomic impact for all involved. Because of the high degree of dominance, it ends up generating high cost in public health, often related to prolonged hospitalization.¹⁸

It is also worth mentioning the link between patients and the group of health assistants. This approach makes it more effective, used as strategies to achieve better results, elucidating with instructional activities together with health professionals and their

patients, relating care and the importance of keeping healthy habits, for better monitoring and better quality of life.²⁷⁻²³

Barros' research¹⁶ corroborates with Cisneros' and Salci³⁰ thinking²⁶ in the sense that chronicity and their variations, due to DM II disease, present intercurrent due to non-compliance with health guidelines, regarding the adhesion measures to be adopted, under the scope of restraining the bottlenecks of therapeutic intervention needs. Attenuating the incidence and recurrence of processes that can cause neuropathic lesions generates special attention to patients at high risk, since they are more susceptible due to the diseases of the pathology.

In Machado's research,²² women aged between 50 and 59 years old, obtained the following results: 69.8% of the patients reached the therapeutic goal, however, 53.8% would not adhere to pharmacological therapy correctly. From this sample, 32.5% reported improvements with pharmacological treatment and 26.9% did not obtain significant improvements.

Another important aspect of researcher Machado²² was pointing to the detriment of the act of lifestyle adoption, such as physical exercises, diet, and periodic examinations. The study emphasizes the importance of strictly following what is recommended by the (MoH), following the guidelines relevant to the maintenance of diet and physical activities. Rational drug control is of paramount importance and should not be overlooked.

In this context, nursing can contribute to the treatment by suggesting measures relevant to patients with diabetic feet, such as food reeducation, foot hygiene, avoiding inadequate shoes that do not provide comfort and safety, in order to avoid calluses and possible wounds.²⁸

Also important are medications, such as the use of ointments, oils, moisturizers for the feet, bandages, compresses, and all medications prescribed by the doctor, with the reason for the rational use of medications.²⁶

Rossi's study²⁹ demonstrated that the use of medications for the treatment of DM has support, despite the forgetfulness of the act of taking the medications; but they do not abandon themselves; it also raises the questioning of the high rate of amputations and other complications due to the importance of self-care. The care of the suit actually influences the aggravation of the complications of diabetes.³⁰

DM is responsible for numerous complications in specific cases of diabetic foot, such as presence of crack and mycosis. The area of the feet with low circulation is more compromised since it significantly reduces sensitivity. However, nurses point out that they guide patients on the proper use of footwear and the importance of keeping hygiene and cutting nails and cuticles. Having seen that there was no coordinated orientation as a routine evaluation of the feet.²⁵

Ribeiro's research²³ reinforces that measures such as daily foot assessments regardless of the age of diabetic patients make every difference in detecting important signs of neuropathic variations according to basic health guidelines. However, the measures that apply to DM in relation to diabetic foot cannot be treated generically, but in a differentiated and personalized way.

With a sample of 52 patients, those were evaluated before and after educational insertion. Of these, it was found that 50% used socks with elastic and after orientations 84.6%; and the use of appropriate shoes was 69.23%, since there was an advance to 96.15, after the intervention guidelines. Being that (65.38%) had no barefoot walking habits and later orientation rose to (88.46%). Other indices were also relevant such as the act of scalding feet (61.54%) a (96.15%) and among others how to cut nails (42.31%) a (94.23%) because this index represents a difference of more than (50%) on average and among these variables such as hydration and periodic evaluation of the feet.²³

Although based on relevant studies, this research has limitations, because, not rarely, working with data already collected is exposed to a certain degree of inaccuracy. Moreover, as pointed out in the present article, the pharmacotherapeutic treatment of diabetic foot, although common, has interferences and influences, including cultural, regional, social, among others, so that it would be necessary large research at the national level with significant sampling, to accurately affirm, how treatment is given, in different regions of the country.

Thus, the research contained in this information can serve as a basis for future studies, with the intention of maximizing information on the importance of adhering to pharmacotherapeutic treatment in diabetic patients in Brazil, and consequently work broadly this theme in health services and outside them, with the purpose of improving the quality of life of patients, through the

prevention of diabetes complications in a safe and professional way.

FINAL CONSIDERATIONS

In view of the research, it was found that the importance of therapeutic adhesion in concurrency with nursing and all multidisciplinary team can generate benefits to patients with diabetic foot. The literature review on the agenda highlighted that diabetic foot can be prevented if patients with diabetes have the correct information from a qualified technical team.

Diabetes Mellitus (DM) is considered a worldwide health problem, so it deserves care and attention from people and health professionals. Diabetic foot is increasingly present in people's lives, and many do not give deserved care for the disease in task.

The adoption of simple measures such as daily activities, such as exercising regularly, adhering to individualized drug treatment, feeding with care from a nutritionist, among others, are recommended prophylactic measures, noting that medications work in the treatment according to the patient's needs, not serving as a standard at all, because for each case there are measures circumstances that are peculiar.

Therefore, it is up to the doctor to prescribe and continue the treatment; reinforcing that consonance with the multidisciplinary team is essential in this.

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