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NURSING INTERVENTIONS FOR THE PERSON WITH DIABETIC FOOT INTEGRATIVE LITERATURE REVIEW

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ABSTRACT

Objective: To identify the interventions of the nurse in the care of the person with Diabetic Foot.

Method: The method used was the integrative review of the literature, carried out in the established databases: EBSCO Host Web CINAHL Plus, MEDLINE and BOn, using the descriptors "diabetic foot", "nursing care" and "nurse", assisting the research with the boolean "and" character. The integrative review of the literature followed the methodological procedures and arose from the following central question: "Which Nursing interventions are most appropriate to the Person with Diabetic Foot?".

Results: Six articles were selected, the results of which were grouped into two dimensions: a first one that defines and characterizes Diabetes Mellitus and the Diabetic Foot, and a second one that addresses the Nursing Interventions appropriate to the person with Diabetic Foot, is subdivided into two classes: Prevention of disease/health promotion and training of nurses.

Conclusion: The importance of nursing consultations for a correct assessment of the feet of people with Diabetes Mellitus is an important measure in the identification of risk factors leading to a reduction in the risk of incidence of ulcers and amputation of the lower limbs.

Keywords: Diabetic foot; nursing care; nursing.

INTRODUCTION

Diabetes Mellitus (DM) has been increasing considerably in the Portuguese population. According to the National Diabetes Observatory (2016)⁽¹⁾, the prevalence rate is in the 7.5% in the Portuguese population, with a significant difference between men (15.9%) and women (10.9%). According to the General Directorate of Health (2010)⁽²⁾, one of the most serious complications associated with DM and which frequently occurs in these patients is the Diabetic Foot. It is estimated to be responsible for about 70% of amputations performed for non-traumatic causes. To prevent these amputations it is necessary that health professionals intervene properly and that diabetic people adhere to preventive measures.

According to the Practical Guidelines on the Management and Prevention of the Diabetic Foot (2011)⁽³⁾, diabetic foot injuries are caused by two or more joint risk factors, including: chronic peripheral neuropathy, sensory neuropathy, sensitive-motor, peripheral vascular disease and bone deformities. The most serious complications of diabetic foot are ulcers, infection, gangrene, and amputation of the toes or lower limbs.

The risk factors associated with diabetic foot complications include history of ulcers and non-ulcerative lesions, non-traumatic amputations of the feet, deficient therapeutic education, inadequate metabolic control, obesity, age, gender, time since diagnosis, difficulty access to health services, callosities, wearing inadequate footwear or socks, smoking, burns, phytictenes, fissures/cracks, drought or peeling, onychogriposes, poor hygiene, improper nail clipping, hypertension, dyslipidemia, low visual acuity, bromhidrosis, mycoses and/or onychomycoses, bone deformities. The later appropriate treatment is started, the greater and more severe the diabetic foot complications are, leading to minor or major amputation.

The complications of DM are closely linked to the quality of life of patients and their families. These complications can promote physical disability, depression, social isolation, unemployment, loss of productivity, affect self-image, self-esteem and the family's role in society⁽⁴⁾. According to DGS Standard No. 5/2011⁽²⁾, there are three levels of care. All diabetics should be followed by multidisciplinary teams consisting of nurse, doctor and if possible a podiatrist (level I). These teams should educate the patient and their family; assess the risk; take preventive measures; and provide care and treatment for more superficial injuries. When injuries are more severe they should be referred to another health level to be evaluated, and if they present signs of infection and/or necrosis they may require surgical intervention and consequently hospitalization. In this level II health, the team should include an endocrinologist, an orthopedist, a nurse specialized in podiatry and a general surgeon can also be integrated. At the last level, level III, a vascular assessment should be made, if necessary, by the professionals mentioned in level II and a vascular surgeon, a physiatrist and an orthotic technician. All diabetics should attend at least once a year at the foot surveillance consultation and examination. In this way, it is possible to identify patients at high risk of ulceration, encourage the use of appropriate footwear, evaluate and treat non-ulcerative conditions.

Health education can contribute to changing behaviors and lifestyles, thereby reducing the risk of injury. The more knowledge patients and their families have about DM and its complications, the more easily they change behaviors and improve their quality of life.

The intervention strategies to be developed so that there is a consolidation of these in health are: training health professionals to meet the needs of quality care; to have information technologies that facilitate timely access to indispensable information and to obtain an organizational response from the directions of healthcare providers⁽⁵⁾.

Verifying the pertinence of the theme, an integrative literature review was elaborated whose main objective is to identify the most appropriate nursing interventions in the care of people with diabetic foot.

METHOD

An integrative literature review was elaborated because it is an important form of research, aiming at the theoretical, scientific basis and sources of bibliographic information in order to obtain results, contributing to evidence-based practice⁽⁶⁾.

Criteria were gathered for data collection, analysis and presentation of results, namely: 1) Identification of the problem and formulation of the PICO question as a starting point; 2) Designation of the inclusion and exclusion criteria of studies, articles or guidelines; 3) Selection of the phenomenon of interest to be extracted from the established research; 4) Evaluation of the collected literature, according to the Joanna Briggs Institute Manual⁽⁷⁾; 5) Interpretation of results; 6) Summary and presentation of the results obtained.

After reflection and discussion on the research theme, the central question of this review was formulated: What are the most suitable Nursing interventions for people with Diabetic Foot?

Based on the central question, the search words "diabetic foot", "nursing care" and "nurse" emerged, assisting the search with the Boolean operator "and", thus combining the various established words. These words took into account the indexing bases and the MeSH and DeCS descriptors. The bibliographic search was carried out between October and November 2018, using studies in Portuguese, English and Spanish from primary sources. The established databases were EBSCO Host Web: CINAHL Plus, MEDLINE and BOn. Inclusion criteria were: Elderly and Adults in the Community and Nursing Care for People with Diabetic Foot. Exclusion criteria are: Hospitalized Elderly and Adults and Personnel Nursing Care with other pathologies.

The exclusion was then made based on the title/abstract/search criteria. The selected time range was 2013-2018, automatically excluding all articles prior to this range and duplicate articles.

From the literature search, 99 articles were identified, 79 were excluded by the title/abstract/established search criteria and 9 were repeated, and 11 were selected for further reading. After reading and analysis, 6 articles were selected (Figure 1).

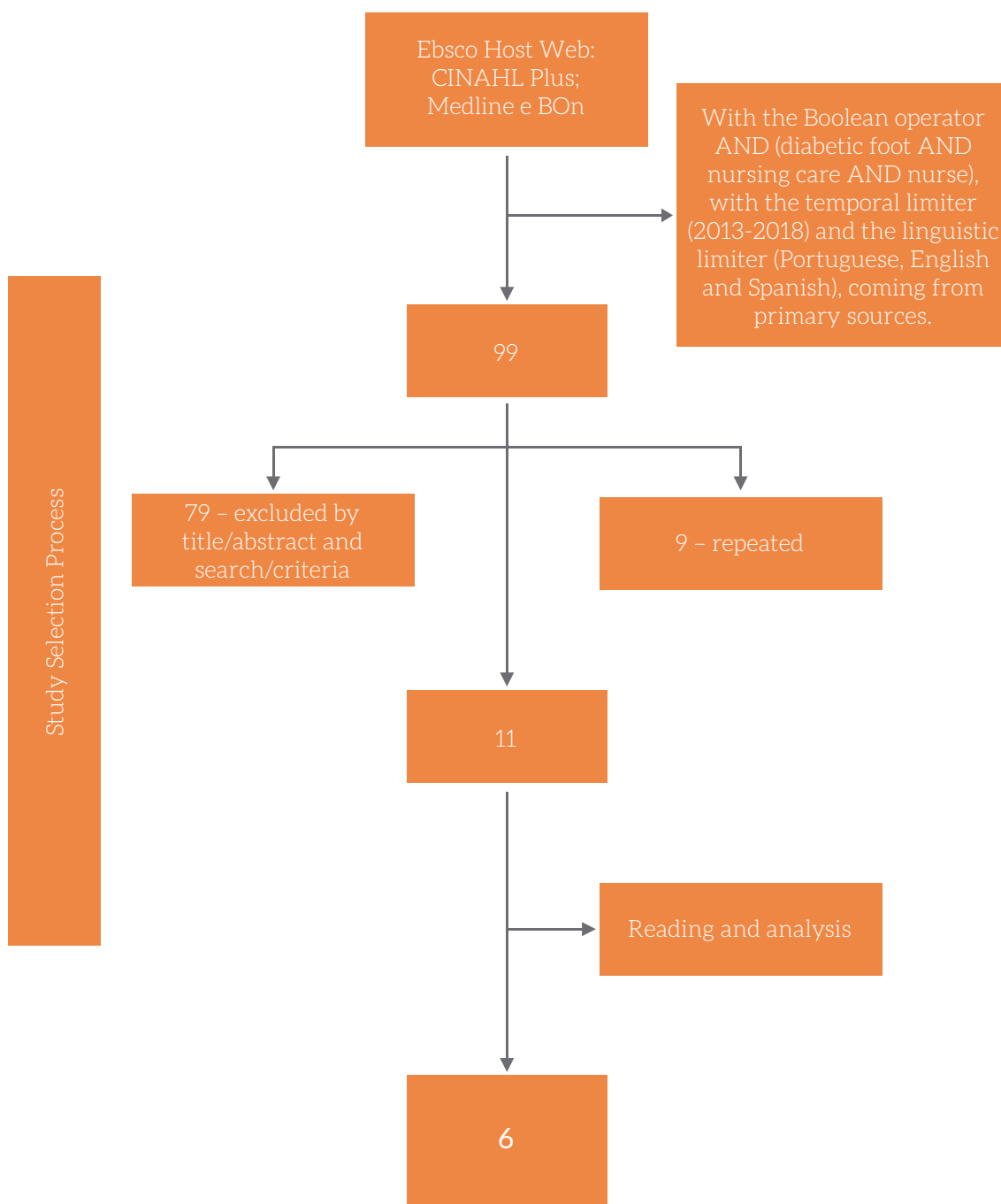


Figure 1 - Flowchart of the article selection process.

During the preparation of the article, references and citations were made with respect for copyright, with concern for ethical issues and principles.

RESULTS

The 11 selected articles were evaluated according to their feasibility, adequacy, significance and efficacy by determining the level of evidence⁽⁸⁾, according to the Joanna Briggs Institute© manual.

After analysis and complete reading, 6 articles were selected to obtain results, one with 5a level evidence, three with 4b level evidence, one with 4a level evidence and one with 1b level evidence.

Subsequently, the respective checklist Joanna Briggs Institute© was applied, and articles that obtained a score greater than 50% of positive responses were accepted in the assessment of methodological quality.

Subsequently, the articles were evaluated according to the degree of recommendation (Table 1).

Table 1 - Characteristics of selected articles.

Id	Authors	Periodic/Year	Method	Evidence Level (JBI)	Degree of Recommendation (JBI)
A ⁽⁹⁾	Vargas et al.	Journal of Nursing (2017)	Descriptive exploratory qualitative study	4b	A
B ⁽¹⁰⁾	Ghanbari et al.	Wiley Online Library (2018)	Systematic Review of Literature	4a	A
C ⁽¹¹⁾	Marques et al.	International Medical Society (2017)	Integrative review	5a	A
D ⁽¹²⁾	Ribeiro et al.	Enfermagem Brasil (2017)	Descriptive cross-sectional study with quantitative approach	4b	A
E ⁽¹³⁾	Oliveira et al.	Revista de Pesquisa: Cuidado é Fundamental Online (2016)	Descriptive study with quantitative approach	4b	A
F ⁽¹⁴⁾	Gifford et al.	World Views on Evidence-Based Nursing (2013)	Randomized Clinical Trial	1b	A

After determining the levels of evidence and their methodological analysis, the results were extracted. Two dimensions have emerged: a first that defines and characterizes diabetes mellitus and the diabetic foot (A⁽⁹⁾, B⁽¹⁰⁾, C⁽¹¹⁾, D⁽¹²⁾, E⁽¹³⁾) and a second that addresses – the Nursing Interventions appropriate to the person with diabetic foot (B⁽¹⁰⁾, D⁽¹²⁾, E⁽¹³⁾, F⁽¹⁴⁾). The latter was subdivided into two classes: Disease Prevention/Health Promotion (A⁽⁹⁾, B⁽¹⁰⁾, C⁽¹¹⁾, D⁽¹²⁾, E⁽¹³⁾) and Nursing Training (A⁽⁹⁾, F⁽¹⁴⁾).

DISCUSSION

Definition of Diabetes Mellitus and Diabetic Foot

The definition of DM and Diabetic Foot was present in most of the articles analyzed. Being defined as a chronic degenerative pathology characterized as a chronic metabolic disorder with high glucose levels caused by total or partial insulin deficiency or cellular resistance to it. It is estimated that up to 2020 is the leading cause of disability and death in the world⁽⁹⁾ and that by 2040 there will be 642 million people with this disease⁽¹¹⁾.

Mortality related to this disease is mainly due to the associated complications caused by the lack of control of capillary glycemia and chronic hyperglycemia. These are divided into acute and chronic complications. As acute complications emerge hypoglycemia, diabetic ketoacidosis, hyperglycemia, usually caused by therapeutic failures⁽¹²⁾.

Within chronic complications there are macrovascular, microvascular changes and neurological complications. In macrovascular complications, there is coronary artery disease, brain disease and peripheral vascular disease arise⁽¹¹⁾. Microvascular changes are associated with retinopathy, with the possibility of partial or total loss of vision, nephropathy with possible renal failure, and diabetic neuropathy, with risk of foot ulcers and sometimes consequent amputation^(11,12).

Diabetic foot is among the most devastating consequences of DM. It causes functional and structural impairment of peripheral nerves leading to lack of peripheral sensitivity, bone deformities and ulcers. It is estimated that 15% of individuals with DM may develop diabetic foot throughout their lives^(9,13). If this complication is not treated early and adequately, it can lead to gangrene, septicemia, lower extremity amputation and possible death^(10,11).

There is also illiteracy among patients regarding foot care and the presence of abnormal pressure points (callus and deformities), peripheral vascular disease and common dermatoses, especially in the fingers, leading to the appearance – ulcers⁽¹²⁾. This evidence rein-

forces the need for interventions by nurses with people with DM to prevent diabetic foot complications in order to prevent them. The main objective of nursing interventions is disease prevention/health promotion, sensitizing patients and caregivers, with the purpose of changing behaviors and lifestyles.

Nursing Interventions

Disease prevention/ health promotion

To reduce the incidence of injuries in patients with diabetic foot and consequently reduce lower limb amputations, the need for early intervention was evidenced. The relevance of the educational approach in preventing complications is evident through daily and adequate care of the lower limbs in preventing the occurrence of ulcers. Regular assessment of the feet of patients with DM should be performed by family doctors or nurses. In this sense, nurses have an essential role in the implementation of interventions in diabetic foot care and should know the best evidence for the prevention of complications^(9,10,11,12,13).

Diabetic foot-related health promotion programs aim to empower patients for foot self-care with the aim of reducing the onset of ulcers in both primary and hospital care. The implementation of recommendations for clinical practice based on scientific evidence have positive effects on nurse practice and patient outcomes^(10,11,12).

In education for the patient and/or caregiver, the importance of nursing interventions in two themes is highlighted: teaching on DM and teaching on diabetic foot care.

The articles stress the importance of avoiding smoking and alcoholism, the adoption of healthy eating, physical exercise, therapeutic adherence, capillary blood glucose control and the influence of sociocultural factors such as educational level, profession and geographical distribution, as a way to evidence the knowledge related to DM. Regarding the teaching of diabetic foot care, the articles include the following interventions: the need for daily assessment of the feet through the verification of interdigital spaces in order to observe the possible presence of fissures or phlegtena; for better foot observation when there is reduced mobility and/or decreased visual acuity, use a mirror as an aid and/or ask the caregiver; cut nails straight and remove the cuticle; perform proper hygiene and hydration of the feet, taking into account the water temperature (37°C), keeping the feet clean, dry and applying moisturizer daily without interdigital spaces; the importance of wearing appropriate, comfortable and therapeutic footwear without walking barefoot; daily change of socks being cotton without elastic; explain the consequences of using a heater, hot water bottle or electric blanket to warm the feet; avoid cold and extreme heat; do not use chemical agents for callus removal, being removed by a health professional;

warn of the need to ensure that the feet are inspected daily, warn the health professional if inflammatory or flictin signs, cleft or injury appear, and cleanse the lesions with mild soap and water until observed by the health professional^(9,10,11,13).

Aiming at changing behaviors, the articles list various resources and strategies used in nursing interventions, which can be performed at home and/or consultations, including: educational sessions, printed materials (leaflets, pamphlets, magazines and books), patient reinforcement calls, educational videos and audios, plays and reinforcement of social interventions (creation of patient, family and professional associations). The elaborated resources need to be easily understood and read by the target audience^(11,13). Another strategy used is the simulation of foot care, allowing the internalization of correct or incorrect practices by the patient, caregiver and health professionals.

Nursing training

Nurses should be encouraged to conduct research with theoretical support as well as methodological articles with greater evidence contributing to the improvement of evidence-based clinical practice^(9,11,12). It is important to have professionals with up-to-date knowledge to provide care and guidance to people with diabetes.

However, it is verified that the nurses' knowledge about this theme is partial, superficial and fragmented, not allowing complete care interventions, namely regarding the detection of risks for the development of the diabetic foot and the frequent performance of the foot exam. These reasons can be pointed out mainly by the weaknesses of nurses found during the training period, which is reflected in the difficulty of exercise and consequently interferes in the care provided to people with diabetic foot⁽⁹⁾.

There are barriers to training reported by nurses such as insufficient time to update knowledge, high numbers of patients, lack of human and material resources, lack of collaboration and lack of follow-up of patients due to financial problems of institutions^(9,10).

The role of the leader is extremely important and it is based on three categories: the category of relationship-oriented behaviors; the category of change-oriented behaviors and the category of task-oriented behaviors⁽¹⁴⁾. In the first category, it mainly addresses communication with the team on clinical practice issues, recognition of the team's efforts for change, encouragement and support for collaboration with specialists and the multidisciplinary team. In the second category the leader must demonstrate commitment to change and seek to understand the difficulties in this process, reinforce the vision and objectives of the process, advocate for change and mobilize additional resources internally and externally. In the third category, the leader is expected to hold regular leadership meet-

ings, clarify roles and responsibilities, monitor staff performance and results, modify and update documentation, and seek resources and training to reflect change⁽¹⁴⁾.

Thus, given the question that gave rise to this review, it is considered that the most appropriate nursing interventions for people with Diabetic Foot are: health education through teaching about DM and teaching about diabetic foot care. Considering essential health education, it is essential that it is evidence based on the training of nurses, with the purpose of acquiring knowledge for better care and guidance on diabetic foot care.

CONCLUSION

Nurses are expected to be qualified and competent professionals, based on scientific and ethical principles, aiming to provide more efficient interventions in diabetic foot care. In fact, nursing interventions are fundamental for the prevention of this disease and its complications.

In the practice of professional practice, health knowledge is a tool of great relevance in the adequacy of care delivery, favoring the minimization of occurrences of foot complications. There is a need for an assessment of the feet of people with DM in nursing consultations as an essential measure in the identification of risk factors, contributing to the reduction of the risk of ulcer incidence and lower limb amputation.

During the elaboration of this integrative literature review, it can be affirmed that there were limitations in the research, recommending its extension to more databases.

However, it can already be noted that health education is a very relevant tool in the prevention of diabetic foot, in order to provide the person with DM to perform self-care. It is intended to contribute to people's awareness of the importance of developing self-care training in the prevention of diabetic foot, also stimulating the adoption of healthy lifestyles. Currently there are still gaps in the provision of care, which needs to be improved by nurses, namely regarding the performance of the diabetic foot exam. The evidence recommends to all people with DM. The foot examination is performed at least once a year, a procedure often overlooked by nurses, since it is only performed when the patient already reports the existence of an injury. In fact, most nurses associate diabetic foot with wounds, which leads us to believe that there are precariousness in vocational training.

Addressing these shortcomings requires leadership and multidisciplinary intervention with specialized professionals, aiming to enhance the use of guidelines and compliance by nurses, where the need for intervention, data collection and procedures are inserted.

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