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EXPERIENCE REPORT

Nursing process applied to the patient with diabetic foot: an experience report

Proceso de enfermería aplicado al paciente con pie diabético: un relato de experiencia

Processo de enfermagem aplicado ao paciente portador de pé diabético: relato de experiência

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Abstract

This article aims to report the experience of applying the Nursing Process in a patient with diabetic foot. For this, descriptive methodology is used, in addition to the qualitative approach, the type of experience report. The activities are developed weekly, from Monday to Thursday, in the afternoon shift, with a workload of 5 hours. Data are collected in a Basic Health and Family Strategy Unit, located in the city of Vitória / ES. Based on the theoretical assumptions of COFEN Resolution No. 358/2009, this research is organized in five stages: data collection, diagnoses, planning, implementation, and nursing assessment. As this is an experience report, there is no need to submit the study to the Ethics and Research Committee with Human Beings. However, the participants have voluntarily signed the Free and Informed Consent Form and the Image Use Authorization Term, guaranteeing the continuity of the study. The results show that, during the application of the stages of the nursing process, it is possible to observe the evolution of healing in the studied patient's injury, so that the nursing process plays an important role in the treatment of injuries in patients with diabetic foot.

Descriptors: Diabetes; Nursing Process; Nursing Care.

Resumén

Este artículo tiene como objetivo relatar la experiencia de aplicar el Proceso de Enfermería en un paciente con pie diabético. Para ello, se utiliza metodología descriptiva, además del enfoque cualitativo, el tipo de relato de experiencia. Las actividades se desarrollan semanalmente, de lunes a jueves, en el turno de tarde, con una carga de trabajo de 5 horas. Los datos se recogen en una Unidad de Estrategia Básica de Salud y Familia, ubicada en la ciudad de Vitória / ES. Con base en los supuestos teóricos de la Resolución COFEN No. 358/2009, esta investigación se organiza en cinco etapas: recolección de datos, diagnósticos, planificación, implementación y evaluación de enfermería. Al tratarse de un relato de experiencia, no es necesario presentar el estudio al Comité de Ética e Investigación con Seres Humanos. Sin embargo, los participantes han firmado voluntariamente el Formulario de Consentimiento Libre e Informado y el Plazo de Autorización de Uso de Imagen, garantizando la continuidad del estudio. Los resultados muestran que, durante la aplicación de las etapas del proceso de enfermería, es posible observar la evolución de la cicatrización en la lesión del paciente estudiado, por lo que el proceso de enfermería juega un papel importante en el tratamiento de las lesiones en pacientes con pie diabético.

Descriptores: Diabetes; Proceso de Enfermería; Cuidado de Enfermería.

Resumo

Este artigo objetiva relatar a experiência da aplicação do Processo de Enfermagem em um paciente portador de pé diabético. Para isso, utiliza-se metodologia descritiva, além da abordagem qualitativa, do tipo relato de experiência. As atividades são desenvolvidas semanalmente, das segundas às quintas feiras, no turno vespertino, com carga horária de 5 horas. Os dados são coletados em uma Unidade Básica de Saúde e Estratégia da Família, localizada no município de Vitória/ES. Partindo dos pressupostos teóricos da resolução COFEN n.° 358/2009, esta pesquisa se organiza em cinco etapas: coleta de dados, diagnósticos, planejamento, implementação e avaliação de enfermagem. Por se tratar de um relato de experiência, não se verifica a necessidade de submissão do estudo ao Comitê de Ética e Pesquisa com Seres Humanos. No entanto, conta-se com a assinatura voluntária, por parte dos participantes, do Termo de Consentimento Livre e Esclarecido e do Termo de Autorização de uso de Imagem, garantindo a continuidade do estudo. Os resultados evidenciam que, durante a aplicação das etapas do processo de enfermagem, é possível observar a evolução da cicatrização na lesão do paciente estudado, de modo que o processo de enfermagem ocupa importante papel no tratamento de lesões em pacientes portadores de pé diabético.

Descritores: Diabetes; Processo de Enfermagem; Cuidados de Enfermagem.

Introduction

Diabetes Mellitus (DM) is a group of metabolic diseases characterized by high blood glucose levels (hyperglycemia), resulting from defects in secretion and / or in the action of insulin. This, in turn, a hormone produced by the pancreas, has the role of controlling the level of glucose in the blood, adjusting its production and storage. The worldwide prevalence of DM has shown significant growth in the last two decades, which implied an increase in the number of diabetic individuals, due to factors such as population aging, increasing levels of obesity and physical inactivity, emphasizing that about 10 to 25% of DM patients over 70 years develop lesions in lower limbs. Of these, 14 to 24% progress to amputation[1,2].

Thus, there are different types of diabetes, caused by a complex interaction of genetic, environmental and lifestyle factors. Thus, metabolic dysregulation associated with diabetes can generate pathophysiological changes due to the destruction of pancreatic beta cells, resistance to action and / or disorders of insulin secretion, imposing a huge 'burden' on the individual with diabetes and the health system[3]. In the case of people with this disorder, DM has the potential to cause several complications, among which it is necessary to list the “diabetic foot (PD)”, characterized by the presence of at least one of the following changes: neurological, orthopedic, vascular and infectious , which can occur on the foot of a patient with diabetes[4,5]. Thus, the approach to assistance to patients with DM during the curricular internship in Public Health determined the interest in the study of foot care, in order to adopt effective measures based on scientific methodology in the treatment of diabetic foot.

The PD is among the most frequent complications of DM and its consequences can be dramatic to the individual's life, characterized by chronic wounds, ulceration and infections, in addition to the possibility of lower limb amputations associated with neurological abnormalities. One of the main causes of diabetic injury is the presence of peripheral sensory-motor neuropathy, associated with loss of painful sensation, perception of pressure, temperature, muscle atrophy and proprioception. This leads to decreased perception of injuries or traumas, resulting in calluses, microfractures and, consequently, injuries[6-8].

Diabetic lesions can be neuropathic, vascular, and mixed. This lesion that occurs in the feet of patients with DM results from the combination of chronic peripheral sensory-motor and autonomic neuropathy, peripheral vascular disease, biomechanical changes that lead to abnormal plantar pressure and infection, which may be present and worsen further the case. Neuropathic ulcers occur in areas of weight and friction distribution, especially under the distal metatarsal epiphyses. Ischemic ulcers, in turn, include secondary injuries, minor trauma and abrasions, which are the main causes of impaired healing of foot ulcers in people with DM[2,9,10].

The causes of foot injury infections can be characterized as monomicrobial or polymicrobial; this is found in a total of 60 to 80% of patients affected by infections. It is known that, for the proper prevention of both plantar injuries and amputations, it is necessary to identify the risks, such as deformities in the fingers; interdigital juices, due to cracks and secondary infections; the distal region of the foot, due to infections in the prominences of the metatarsals; and the medial region of the foot[11].

Thus, patients with PD need specific, comprehensive, and holistic nursing care, which, in turn, must be based on a scientific method specific to the profession, such as the Nursing Process (NP). According to the Resolution of the Federal Nursing Council (COFEN)[12] No. 358/2009, the EP guides the care and documentation of professional practice. This is organized in five stages, namely: data collection, diagnosis, planning, implementation, and nursing assessment. When implemented in a deliberate and systematic way, the EP supports the increase of the profession's scientificity. As a result, nursing becomes more visible, recognized, individualized, reflective, dynamic, and autonomous, and nurses are required to have technical, intellectual, cognitive, and interpersonal skills for their execution[13].

In this perspective, it is recommended that the NP be based on a theoretical framework that directs care. Nursing has several theories, so that, among the most widespread in Brazil, the Theory of Basic Human Needs (NHB), by Wanda Horta, is mentioned, which allows a holistic view of the patient and reinforces the importance of care to be human in their psychobiological, psychosocial and psycho-spiritual needs. In addition to the theories, nursing also considers several classification systems, the Taxonomy of the North American Nursing Diagnoses Association (NANDA International) being one of the best known and applied[14-17].

In this sense, NANDA-I is constituted as a standardized language system, recognized worldwide by nurses, organized in 13 domains, 47 classes and 244 nursing diagnoses. Its multiaxial structure is composed of 7 axes, which guide the diagnostic process, namely: axis 1 - diagnostic focus; axis 2 - subject of the diagnosis; axis 3 - judgment; axis 4 - location; axis 5 - age; axis 6 - time; axis 7 - category of diagnosis. Each axis corresponds to a dimension of the human response, which is considered in the diagnostic process. The construction of a diagnosis statement is established by combining the values of axes 1, 2 and 3. When more clarity is needed, values of the other axes are added. It is worth mentioning that, in some cases, the “diagnostic concept” and “judgment” axes can be combined into a single diagnostic concept[17].

Regarding the prepositions made, it is worth noting that this study aims to present the experience of applying PE based on the theory of NHB and NANDA-I diagnoses in a patient with diabetic foot.

Methodology

This research is configured as a descriptive study, with a qualitative approach, of the experience report type,

characterized by a modality that allows a holistic and significant investigation of real life episodes of the researcher and the research subject[18,19].

During the four months of the experience, between March, April, May and June 2018, during the practice period of the collective health internship 2018/1, the activities were developed weekly, from Monday to Thursday, in the afternoon shift, having a 5 hour journey. Thus, data collection was carried out in a Basic Health and Family Strategy Unit (UBS / ESF), located in the city of Vitória / ES.

Consisting of five steps - data collection, diagnostics, planning, implementation and nursing assessment, according to COFEN resolution No. 358/2009 -, this study exempts itself from the need to submit the study to the Ethics and Research Committee with Human Beings - CEPSH, although the participant has voluntarily signed the Free and Informed Consent Term (ICF) and the Image Use Authorization Term (TAI), guaranteeing the continuity of the research.

Results and Discussion

One of the nurse's duties in the Family Health Strategy (FHS) is home visits, considered as a punctual contact by the nursing team to assess the demands demanded by the user and / or family, as well as the environment where they live, in order to establish a plan assistance programmed with a defined objective[20].

In this perspective, on March 4, 2018, following the invitation of a Community Health Agent (CHA), a home visit was made to a patient with diabetic foot. On that occasion, the first nursing consultation took place, defined as the provision of assistance by the nursing professional, both for the healthy individual and for those who are hospitalized. In many cases, it is the first contact with the client to identify their health problems.

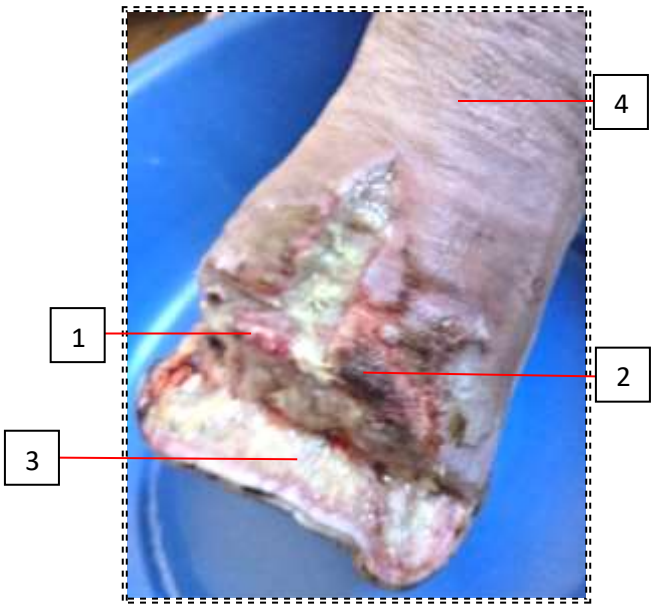
The nursing consultation aims to provide systematic nursing care, identifying health-disease problems, executing, and evaluating care that contributes to the promotion, protection, recovery, and rehabilitation of health[12,21].

First step: Nursing Consultation

Anamnesis: 04/04/2018 - 15:00. A.T.Q, 38 years old, single, born in Barra de São Francisco (North of Espírito Santo), currently living in the city of Vitória / ES together with his aunt and grandmother. He denies alcoholism, smoking and drug allergy, reports having had uncontrolled DM for about eight years, did not adhere to drug treatment (Metformin 500 mg and Glibenclamide 5 mg) and says he never cared about the issue. Evidence of a left foot injury (post-operative diabetic foot amputation of the toes) mentions that, when he identified the problem, he went to the Emergency Room (PA) of "Praia do Suá", being sent to São Lucas Hospital, where he underwent partial amputation surgery on the dorsum of his left foot. Previous history: diabetic and hypertensive mother and father. Refers ingestion of soft drinks, fried foods, excess carbohydrates. Using Amoxicillin + Clavulanate 875 + 125 mg.

Physical examination: lucid, oriented, good general hygiene, spontaneous eye opening, isochoric pupils and photoreactive to light, preserved visual field. Otoscopy: tympanic membrane integrates without signs of inflammation and presence of cerumen. The oral cavity integrates, observed the absence of molar and incisor teeth, the others with the presence of cavities. Movable trachea, thyroid and intact palpable cervical lymph nodes. Spontaneous breathing in room air without effort, physiological vesicular murmurs. Normophonetic heart sounds in 2T. Abdomen flaccid, painless to superficial and deep palpation, RHA +, vesicointestinal eliminations present. Walks with the aid of crutches. Capillary glycemia equal to 314 mg / dL, blood pressure equal to 130/80 mmHg, non-integral integument related to left foot injury, as shown in Figure 1.

Figure 1. Diabetic foot at the time of admission to a home visit. Vitória, ES, Brazil, 2018



Source: Personal archive, 2018.

Following the physical examination, it was possible to observe that the lesion had positive neuropathic signs, total loss of sensation, negative monofilament test and decreased posterior tibial pulses (peripheral polyneuropathy). The lesion had about 10 cm in length x 5 cm in depth, irregular edges, presence of granulation tissue (1) and necrotic tissue (2) in diffuse parts, predominant fibrin tissue in the lesion bed (3) in addition to the dry skin (4). No joint limitations and Aquileu's reflex were observed.

It is known that it is through anamnesis and physical examination that nurses identify problems, determine diagnoses, plan, and implement nursing care[22]. In this way, the main "nursing problems" were selected and associated with the Basic Human Needs of Wanda Horta, according to Chart 1.

Chart 1. Main nursing problems associated with the affected Basic Human Needs. Vitória, ES, Brazil, 2018

Nursing Problems	Basic Human Needs
Uncontrolled diabetes	Hormonal regulation
Resistant to drug treatment	Acceptance
Left foot injury (amputation)	Cutaneomucosal integrity, self-image, self-esteem,
Bad eating habits	Nutrition and Hydration
Teeth with cavities	Body care
Walks with the aid of crutches	Locomotion
Capillary glycemia equal to 314 mg / dL	Electrolytic and hormonal regulation

Second step: Nursing Diagnostics

The diagnosis forms the basis for the selection of nursing interventions and the achievement of results, which are the responsibility of nurses[12,23]. To perform nursing care in a systematic way, it is essential that the observed phenomenon is also described in a standardized way, that is, from a description based on a classification system[17,24].

Several studies highlight the benefits of using classification systems for the development of the profession. Such systems are considered essential for documenting, coding and storing nursing care information[25,26]. This study used the NANDA-I classification system and, with that, the main nursing diagnoses (Chart 2) associated with the patient in question were listed.

Chart 2. Main Nursing Diagnoses of NANDA-I 2018-2020. Vitória, ES, Brazil, 2018

• **Risk of unstable blood glucose** related to insufficient control of diabetes, evidenced by a verbal report of not using the prescribed drugs.
• **Sedentary lifestyle** related to daily physical activity lower than recommended for gender and age, evidenced by a verbal report of not performing physical activity.
• **Ineffective coping** related to the behavior of taking risks, evidenced by not looking for the Health Unit to renew the prescription.
• **Impaired skin integrity** related to alteration in the integrity of the skin, evidenced by a lesion of the left diabetic foot type.
• **Risk of infection** related to invasive procedure (left foot injury).
• **Disorder in body image** related to the absence of part of the body (left toes).
• **Low situational self-esteem** related to self-negative verbalizations, evidenced by discouragement and loss of hope to improve.
• **Self-neglect** related to insufficient oral hygiene, evidenced by the presence of tooth decay.
• **Impaired physical mobility** related to the reduction in gross motor skills, evidenced using crutches.
• **Risk of metabolic imbalance syndrome** related to elevated blood glucose levels.

Third step: Nursing Planning

According to Resolution No. 358/2009, nursing planning determines the results that are expected to be achieved. In the present experience report, the following results were aimed at, according to the Classification for Nursing Practice[27] (Chart 3):

Chart 3. Nursing Planning. Vitória, ES, Brazil, 2018

• Control diabetes
• Adhere to drug treatment
• Heal left foot injury
• Improve eating patterns
• Improve dental hygiene
• Improve mobility
• Decrease blood glucose levels

Fourth step: Implementation of Nursing

Aiming at the expected results, the nursing implementation stage was fundamental in carrying out the determined actions or interventions[12]. From the nursing planning, it was possible to establish the following interventions for Mr. A.T.Q, according to the Classification of Nursing Interventions[27] (Chart 4):

Chart 4. Main selected nursing interventions. Vitória, ES, Brazil, 2018

N	Nursing Interventions
01	Schedule a medical appointment at a Basic Health Unit
02	Guide how much healthy eating
03	Perform glycemic control
04	Monitor intake of prescription drugs
05	Guide adequate oral hygiene with toothpaste
06	Guide on the use of crutches
07	Schedule appointment with Social Service
08	Include the patient in the Hiperdia Program
09	Bandage daily at UBS 1 x daily

In interventions 01 and 04, the affected treatment and acceptance NHBs became evident. Right after the first home visit to Mr. A.T.Q, it was possible to realize the need for multiprofessional assistance. In this sense, a medical appointment was immediately scheduled to evaluate and prescribe new hypoglycemic drugs, since drug therapy in the control of diabetes prevents chronic complications and helps in self-knowledge of the disease. In addition, the role of the family is fundamental in supporting and monitoring medication intake times[11].

In interventions 02 and 03, NHBs for learning and

hormonal regulation were verified. Thus, Mr. A.T.Q, together with his family members, was instructed on healthy eating and capillary blood glucose control, as there was no nutritionist at the health unit to perform the care. So, it was delivered to Mr. A.T.Q. a capillary glycemia device to perform the control by guiding the normal and abnormal parameters of the blood sugar levels. The patient was also advised to avoid in his meals: fried foods, soft drinks, excess sugar and salt, carbohydrates, among others. Studies show that food control in diabetic patients reduces the risks of cardiometabolic complications[4,5]. For the Brazilian Diabetes Society[2], the control of glycemic levels is fundamental to obtain better systemic results in the treatment of diabetes.

The guidelines for oral hygiene (guideline 05) were configured as another fundamental nursing intervention, based on the NHB of compromised self-care. Mr. A.T.Q had decayed teeth. It is evident that oral hygiene was fundamental in preventing periodontitis, that is, it is considered the most common localized and inflammatory dental disease caused by bacterial infection and may be associated with dental plaque[28].

Interventions 06, 07 and 08 were performed simultaneously, as it was observed that, due to the low purchasing power, the patient would need support from the Social Service available at the unit. Crutches were made available to assist in locomotion, as well as transportation vouchers, to travel to the place where the bandages were made, on weekends at the Emergency Care Unit. The monitoring of the entire process was carried out via the Hiperdia program, which aims to register users in the computerized system provided by DATASUS[29]. The NHBs affected in this process were locomotion, security, space, and participation.

Regarding intervention 09, it was observed that the evolved NHBs were: body care, cutaneomucosal integrity, vascular regulation, locomotion, acceptance, self-esteem, self-image, and attention. Thus, the objective was also to describe the experience report on the healing process and evolution of the lesion in the diabetic foot of the patient in question. It is worth mentioning that the client's commitment to following the guidelines performed by nursing was of fundamental importance for the success of the treatment.

Dressings were applied daily in the afternoon. Initially, it was decided to use 0.9% warm saline (SF), 2% papain, hydrogel, petroleum plate, metaline plate, gauze, and bandage. At first, this heated serum was used during the cleaning of the lesion, by irrigation, as excessive rubbing with the aid of forceps and gauze irritates the skin around the wound, in addition to injuring the granulation tissue itself. In Brazil, it is recommended to clean the wound with 0.9% warm saline solution, in a jet. This technique is used to remove foreign bodies, loose adhered tissues, in addition to maintaining newly formed granulation tissue (angiogenesis)[30].

Regarding the necrotic and devitalized tissue of the wound, 2% papain was selected, since it is a complex mixture of proteolytic enzymes and peroxidases, which causes proteolysis of the devitalized tissue. It is a chemical debridement agent, introduced in Brazil in 1983, used in wounds of different etiologies with positive results.

Granulation tissue, in turn, consists of the proliferation of vascular endothelial cells and fibroblasts. The term derives from its pink, smooth, granular appearance on the surface of wounds[30]. Thus, to increase the capacity of tissue proliferation of the lesion in question, Hydrogel was used, which, according to it, is a sterile gel that promotes hydration, healing and skin protection, in addition to relieving pain through humidification. of the wound bed and decreased noceptors in the exposed nerve endings.

Subsequently, a petrolatum plate was used in the lesion - defined as a primary, sterile, non-adherent dressing, consisting of a cellulose acetate mesh impregnated with petrolatum emulsion. Petratum is a mixture of hydrocarbons obtained through the removal of mineral oils, it is an efficient humectant that contributes to the hydration of intact or damaged skin[31].

Metaline was also used as a primary covering, that is, a highly absorbent compress, composed of cotton, viscose and a wound contact layer containing aluminum particles that prevents the compress from adhering to the wound bed and does not favors bacterial growth[29]. Thus, the illustrations below show the healing process of the lesion during the curricular internship period carried out at UBS.

Figure 2. Lesion in "Diabetic Foot" 1st day of evolution. Vitória, ES, Brazil, 2018

Source: Personal archive, 2018.

Figure 3. Lesion in "Diabetic Foot" 23rd day of evolution. Vitória, ES, Brazil, 2018

Source: Personal archive, 2018.

Fifth step: Nursing Evaluation

The evaluation is the last stage of the NP, in which the changes and responses that occurred in the person at a given moment in the health process were verified[12]. Thus, Mr. A.T.Q currently maintains his daily activities without compromising locomotion, esteem, self-concept, self-image and therapy.

Figure 4. Lesion in "Diabetic Foot" 31st day of evolution. Vitória, ES, Brazil, 2018

Source: Personal archive, 2018.

Figure 5. Lesion in "Diabetic Foot" 39th day of evolution. Vitória, ES, Brazil, 2018

Source: Personal archive, 2018.

Final Considerations

This experience report aimed to apply PE in patients with diabetic foot. From this study, then, it was possible to witness all stages of the NP, in addition to identifying its purposes. Thus, the use of innovative products in the treatment of injuries has become a challenge for nurses since the Health Units are limited in terms of topical products and qualified human resources. In this perspective, one of the limitations of this study is the lack of products and materials suitable for daily dressings in the Basic Health Unit where the curricular internship was carried out.

Thus, it is considered essential that nurses have anatomical and phytopathological knowledge integrated with the NP, as the evaluation of the lesions succeeds this prior knowledge. It is understood, therefore, that further studies are needed to describe the benefits of PE applied to patients using the Unified Health System.

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