NURSING CLINICAL APPROACH IN THE PREVENTION OF DIABETIC FOOT

Abordagem clínica de enfermagem na prevenção do pé diabético

Abordaje clínico de enfermería en la prevención del pie diabético

Original Article

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ABSTRACT

Objective: To identify the procedures adopted during nursing consultation to the person with diabetes mellitus, in the prevention of diabetic foot. **Methods:** Descriptive, observational and quantitative study, carried out in an institution of secondary care on diabetes and hypertension of the Ceará State, between August and September 2011. Data was collected through a form during the nursing consultation, being organized in pictures with descriptive analysis. **Results:** The clinical management of diabetic foot is performed by nurses with little emphasis, omitting relevant questions about the patient's habits, such as walking barefoot, nails cutting, attention to calluses and feet moisturizing. Furthermore, some guidance is neglected, as to inform about the best time to buy the shoe, type of socks to be used and the fact they cannot walk barefoot. **Conclusion:** The procedures adopted during consultation by the nurses in this study were not the ideal ones, as the anamnesis and clinical examination of feet occurred incompletely, missing important steps for the prevention of diabetic foot or the potential complications associated to it.

Descriptors: Diabetic Foot; Education; Nursing; Diabetes Mellitus.

RESUMO

Objetivo*: Identificar as condutas utilizadas durante a consulta de enfermagem à pessoa com diabetes mellitus, na prevenção do pé diabético.* ***Métodos****: Estudo descritivo, observacional e quantitativo, realizado em uma instituição de atendimento secundário em diabetes e hipertensão do estado do Ceará entre agosto e setembro de 2011. Os dados foram coletados por ocasião da consulta de enfermagem, através de um formulário, sendo organizados em quadros com análise descritiva.* **Resultados***: A abordagem clínica do pé diabético é realizada com pouca ênfase, excluindo-se perguntas relevantes sobre os hábitos do paciente, tais como: andar descalço, corte das unhas, cuidados com os calos e hidratação dos pés. Além disso, são negligenciadas orientações, como a informação sobre o melhor horário de comprar o sapato, o tipo de meia a ser usado e não poder andar descalço.* **Conclusão***: Constatou-se que a conduta utilizada nas consultas realizadas pelas enfermeiras da presente pesquisa não foi a ideal, pois a anamnese e o exame físico dos pés ocorreram de modo incompleto, deixando de cumprir etapas importantes na prevenção ao desenvolvimento do pé diabético ou das potenciais complicações a ele associadas.*

Descritores*: Pé Diabético; Educação em Enfermagem; Diabetes Mellitus.*

RESUMEN

Objetivo*: Identificar las conductas utilizadas durante la consulta de enfermería a la persona con diabetes mellitus en la prevención del pie diabético.* **Métodos:** *Estudio descriptivo, observacional y cuantitativo realizado en una institución de atención secundaria en diabetes y hipertensión del estado de Ceará entre agosto y septiembre de 2011. Los datos fueron recogidos por ocasión de la consulta de enfermería a través de un formulario y organizados en cuadros con análisis descriptivo.* **Resultados:** *El abordaje clínico del pie diabético es realizado con poca énfasis excluyéndose preguntas relevantes sobre los hábitos del paciente*

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tales como andar descalzo, corte de las uñas, cuidados con los callos y hidratación de los pies. Además, orientaciones como la información sobre el mejor horario para la compra del zapato, el tipo de calcetín a ser usado y el hecho de no poder andar descalzo son negligenciadas. **Conclusión:** *Se constató que la conducta utilizada en las consultas realizadas por las enfermeras de la presente investigación no fue la ideal pues el anamnesis y el examen físico de los pies ocurrieron de modo incompleto, sin cumplir etapas importantes en la prevención al desarrollo del pie diabético o de las potenciales complicaciones a él asociadas.*

Descriptores*: Pie Diabético; Educación en Enfermería; Diabetes Mellitus.*

INTRODUCTION

The diabetes mellitus (DM) has stood out among the chronic degenerative diseases for the growing prevalence and increased morbidity and mortality associated with it[1]. The chronic hyperglycemia – the main characteristic of the disease – is associated with long-term irreversible and disabling systemic diseases and the dysfunction and failure of several organs, mainly eyes, kidneys, nerves, heart and blood vessels[2].

One of the main conditions associated with DM is the diabetic foot, defined as a clinical situation in which the lower limb presents ulceration, destruction of deep tissues and infections associated with neurological disorders, caused by sustained hyperglycemia with or without the coexistence of peripheral vascular disease[3].

The "diabetic foot syndrome" comprises a reasonable number of pathological conditions, including neuropathy, peripheral artery disease (PAD), Charcot neuroarthropathy, foot ulcers, osteomyelitis, and amputation, which – although potentially predictable – is 15 times more common among people with diabetes, with 50-70% of nontraumatic types occurring due to DM[4].

The vulnerability of people with DM to lower extremity amputations reinforces the multiprofessional team's need to understand this complex process in order to deepen the focus on this problem in their daily practice[4].

Neuropathy-related symptoms, ulcers and lower extremity amputations may be associated with compromised quality of life (QOL) of people with DM[5]. In order to avoid lower extremity complications, education and prevention programs should be implemented and monitored by a health care team. Within this context, the nurse stands out as one of the professionals responsible for the patient's adherence to treatment and educative actions aimed at the prevention of DM-related harms[2].

Thus, the nursing consultation appears as an adequate and opportune moment for these actions, since it provides a direct contact with the patient. It also enables individual and consistent assessment of the person with DM and is the right moment for interventions and self-care support[6]. Concerning the diabetic foot issue, the nursing consultation provides nurses with a unique chance to evaluate dermatologic, structural and circulatory aspects, the tactile-pressure and vibratory sensitivity, hygiene habits, and footwear conditions. It also provides a chance to monitor potential complications of people with ulcers[7].

Thus, during the evaluation of the lower extremity of the person with DM, the nurse should not only check for the influence of factors that can be directly or indirectly involved in the development of such complications, but also identify their consequences on people's lives, highlighting the glycemic control and the foot self-examination. Therefore, the nurse must act as an educator for this self-care attitude through the incorporation of a detaile examination of the lower extremity. By performing this exam, the nurse will be teaching the person with DM about the importance of this attitude in their daily life[6].

Considering the aforementioned problem, some questions arise: do nurses perform the clinical examination of the foot in people with DM? How is the examination performed? Do nurses suggest and encourage foot self-care? It is important to understand how these professionals experience the nursing consultation in order to get information that help the planning of educative actions. Thus, this study aimed to identify the actions performed during the nursing consultation with people with diabetes mellitus aimed at the prevention of the diabetic foot.

METHOD

This a descriptive observational quantitative research conducted at a hypertension and diabetes specialized care center that has a multiprofessional team composed of nurse, psychiatric, ophthalmologist, cardiologist, angiologist, endocrinologist, nephrologist, social work assistant and physiotherapist. The center is linked to the Ceará State Health Secretariat.

The center has sixteen nurses, but only twelve participated in the study. Inclusion criteria were the availability to participate in the study and the performance of outpatient care for people with DM. The exclusion criteria consisted of the impossibility of participation of nurses who were on vacation or off work.

Data were collected in the period from August to September 2011. The strategies used to collect data consisted of nonparticipant observation of the consultation and semi-

structured interview – used to identify the profile of the sample of nurses – contemplating the following variables: age, period since the graduation, highest degree (specialized, master or doctor) and the time they have been working for the institution. In addition to these, a pre-structured script was used to observe the progress of the nursing consultation. It focused on nurses' attitudes concerning the anamnesis (patient's general foot care), the physical examination of the foot (static and dynamic inspection, and palpation) and the orientations about foot care for patients with DM – orientation concerning the prevention of lesions and monitoring of existing complications.

Data were organized in charts presenting absolute frequency. The analysis contemplated – through descriptive statistics – the relations between the surveyed variables and the findings. The result was considered satisfactory when the researched item was present in more than 50% of the observations.

The project was approved by the Research Ethics Committee of the University of Fortaleza under the No. 212/2011. It is important to say that the participants signed the Free Informed Consent Form.

RESULTS

Regarding the identification data, it was verified that the group of professionals participating in this study consisted of 12 nurses with a mean age of 45.5 years and mean time of graduation of 22.5 years. In all, three nurses had a college degree, six had a specialization, two held a master's degree, and one had a doctor's degree in nursing. With regard to the length of professional experience in the institution, the mean was 14.4 ± 118.8 years.

Concerning the aspects observed during the consultation, it was verified that of all the tem items analyzed, three were questioned for less than 40% of nurses: appropriate time for buying shoes, the habit of walking on barefoot and the elastic conditions of the socks used by patients. On the other hand, skin hydration was highly assessed during consultations. (Chart I)

A physical examination is performed in the nursing consultation as complement to the anamnesis. It was the second set of questions observed by researchers (Chart II). Of the 27 items evaluated, the following were little assessed during the nursing consultation: peripheral pulse palpation and claudication during the dynamic inspection. With regard to the most often assessed items, the static inspection phase of the physical examination was the item that the nurses evaluated more often.

At last, the orientation given by nurses to patients are presented in Chart III. Of the 11 items present in the instrument, the ones related to a predisposition to traumatic injury were less often assessed. However, the orientations concerning hygiene and hydration were more often assessed by nurses who focused more on daily skin hydration and filing of nails rather than cutting them.

DISCUSSION

This current study identified the conduct used during the nursing consultation with the person with diabetes mellitus. The aspects observed referred to the anamnesis, the physical examination and orientation. The nurses deal with many important issues; however, some issues that are not highlighted during the consultation are of great importance for preventing the diabetic foot.

Most questions asked for people with DM (Table I) focused on the primary prevention of complications of the diabetic foot. However, besides these questions, it would be more efficient to follow the recommendations of the *Sociedade Brasileira de Diabetes* (Brazilian Diabetes Society)[2], highlighting important measures for the secondary prevention of the patient with diabetes mellitus since this research took place in a reference center where individuals are already received with some type of lesion. With specific care, it is possible to reduce the frequency and length of hospitalization and the incidence of amputations by 50%[3].

During the specialized nursing consultation with people with diabetes the professional should pay attention to each step and understand the importance of each question asked the patient in order to obtain conditions needed to develop an adequate care plan for each case, assess the risks and offer educative support, maximizing the control and treatment of existing clinical complications[8].

A physical examination of the foot is indispensable and must be ensured by the interdisciplinary team in every consultation[8]. Some orientation measures are required and based on: regular examination and inspection of the foot; identification of foot at risk; education of family members, patients and professionals; use of appropriate footwear; and treatment of the non-ulcer disease[2].

It is important to highlight that during the consultations observed in this research, six (50%) nurses questioned about the use of footwear and only two (16.6%) asked about the time patients buy the footwear. These questions are very important due to the fact that the choice for shoe is strongly associated with the development deformities, lesions and infections that can lead to the development of the diabetic foot[9]. The importance of the time patients buy their shoes is due to the fact that during the evening the blood circulation is concentrated on the lower extremity,

Table I - Data on the anamnesis of foot examination of the person with DM. Fortaleza-CE.2011

Does the nurse ask	Yes	
	n	%
How do you wash your feet?	7	58.3
Do you expose your feet to extreme heat?	6	50.0
How do you dry your feet?	8	66.6
How do you take care of your nails?	7	58.3
Do you hydrate your skin? What do you use?	10	83.3
What type of shoes do you wear?	6	50.0
What time of the day do you buy your shoes?	2	16.6
Do you walk on barefoot?	4	33.3
What do you do when you have callus?	7	58.3
What type of socks do you wear? Do they have loose or tight elastics?	3	25.0
Do you feel formication in your feet?	10	83.3
Do you feel pain or burning sensation in your feet?	9	75.0

Tabela II - Data on the physical examination of feet of people with DM. Fortaleza-CE. 2011.

Does the nurse examine	Yes	
	n	%
Nails	11	91.6
Dry skin	11	91.6
Cracks	11	91.6
Callosities	11	91.6
Edemas	12	100.0
Hematomas	11	91.6
Patient's response to touch	8	66.6
Peripheral pulse	4	33.3
Sensitivity	10	83.3
Claudication	4	33.3
Feet wounds	11	91.6
Amputation	8	66.9
Palpable pulse	7	58.3
Foot hair	7	58.3
Plantar arch alterations	7	58.3
Metartasal prominence	7	58.3
Claw/hammer/callus toes	9	75.0
Dorsal vasodilatation	9	75.0
Dry skin/paleness	10	83.3
Hot foot	9	75.0
Articulation alterations	10	83.3
Cyanosis	10	83.3
Stunted nails	9	75.0
Postural redness	9	75.0
Cold foot	6	50.0

Table III - Data on orientation about foot care of people with DM. Fortaleza-CE. 2011.

Does the nurses inform about	Yes	
	n	%
The proper washing of feet	7	58.3
Feet exposure to extreme temperatures	7	58.3
Care in drying the feet	6	50.0
Care in moisturizing toenails before cutting them	6	50.0
Proper cutting of nails	8	66.6
Feet hydration	9	75.0
Use of appropraite footwear	4	33.3
Appropriate time to buy shoes	1	8.3
Not walking on barefoot	4	33.3
Callus care	4	33.3
Use of appropriate socks	1	8.3

favoring the purchase of loose shoes that will comfortably fit the feet[2].

In Table II, it is possible to observe that nurses do not check for peripheral pulse and deambulation/claudication very often. These items should not be neglected because people with DM have the predisposition to difficulties in blood circulation, affecting venous return and hence the body limbs, causing pain or discomfort while walking[10]. During the peripheral vascular examination, the professional should ask people with diabetes about the presence of intermittent claudication, pain while at rest or at night. Claudication occurs while walking and stops when resting. Its severity depends on the distance walked and the region affected, and its worst prognosis is in short walks and areas that are more distal to the feet[11].

An absent or weak pulse is an important characteristic for this diagnosis. If the pulse is absent, the examiner should pay close attention to it because both the congenital absence and reperfusion can bruise it[12]. The professional should consider the posterior tibial pulse and the foot pulse, classifying them in palpable and non-palpable. In case of absent or weak pulse, another professional should perform a second examination, and if he confirms the absent pulse and presence of other signs of vascular impairment, the patient should be referred to an expert[13].

The patients assisted by the sample group of this study had already been referred from other *Unidades Básicas de Saúde da Familia* (Basic Family Healthcare Units) because they presented these warning signs, and with the confirmation of vascular or neural alterations with restricted resolution they were referred to specialized doctors of the service or to other reference units.

The other items of the physical examination of the foot were performed by most of the nurses, corroborating with the findings of a study[7] that verified that these are the health care professionals who are most involved in the regular propaedeutic evaluation of the diabetic foot.

Regarding the most evaluated aspects during a physical examination, they are in accordance with the results of a study[14] in which the dry skin, fissures, callosities and wounds were highly present in a group of 93 people with DM. The high prevalence of these clinical conditions in similar populations can explain the importance of evaluating these items instead of others[15].

Similar attention should be paid to the decreased protective sensation characterized by the decreased pain sensation in the skin and by the partial or total absent Achilles reflex for they are early signs of future ulcerative processes in the feet and indicate a high risk for the development of complications like the amputation, mainly in patients who already have a diabetic foot[3]. The absence of Achilles reflex has not been analyzed in this current study, but nurses analyzed the decreased pain sensation.

Table III presents information about the orientation for foot care provided by nurses. The items that were less often assessed were the ones related to the high predisposition to traumatic injury: orientation about the best time to buy shoes, use of appropriate footwear, orientation about walking on barefoot, caring about callus, and appropriate use of socks. These orientations are very important for the prevention of ulcers in people with DM.

Taking care of feet and nails, avoid mycoses, dry the humidity between toes, inspect shoes and avoid the use of callus removal liquid, shavers or razors are all

important measures for primary prevention of ulcers and amputations[16]. The professional should adopt all possible interventions of prevention in order to provide appropriate care for all the problems presented by the people with diabetes. Among the interventions, the constant use of appropriate footwear according to the needs of each person stands out. Studies[17] show that foot pressure points, callosities and deformities can be corrected with comfortable footwear. The orientations about hydration and nail care were the most frequent ones in this study.

It is extremely important for nurses to encourage patients to perform self-care actions, changing ideas, conceptions, behaviors and attitudes in order to conquer self-esteem, the will to learn, control and live with DM[18]. The nursing consultation aims to minimize or prevent harms caused by diabetic neuropathy and its effects on patients' feet. However, a few people with diabetes mellitus are properly informed about the potential morbidity caused by diabetic foot ulcers or the possible preventive measures to avoid the specific morbidity of the diabetic foot[19].

Therefore, the nurse needs to organize a care plan for the evolution of patient's complication, and one of the main strategies is the nursing orientation[19]. Educative strategies are efficient, easy to monitor and enable the active participation of clients and family members. It is professionals' duty to encourage and teach people with diabetes to manage available ways for living longer with quality of life[20]. There is a reduction between 44% and 85% only by performing preventive, effective and appropriate foot care[19]. The orientation for self-care is currently considered an important tool for the management of chronic disease, mainly the DM, due to its interference in the improvement of quality of life and the reduction of costs associated with a drop in the complications rates. This practice could certainly bring important contributions to individuals with risk factors for the disease[21]. Thus, the importance of the health education of people with DM stands out for being one of the axes of the care process that can favor the bond between the team and the client, facilitating the greater adherence to treatment and the prevention of complications.

Besides controlling signs and symptoms of the disease, the care focus contributes to the development of care practices aimed at the promotion of individuals' active behaviors for changes that the health processes require, conceiving nursing as a human science with a practical orientation focused on the promotion of the health projects of every person. Within this context, one of the goals of therapeutic education is to guide the person into the process of autonomy and responsibility for the treatment[22].

One of the limitations of this study was the number of observations, which were performed according to the schedule of consultations in the center where the study took place. Since it is a small quantitative study, the data analyzed cannot be generalized for other realities. It was also verified that there is a scarcity of intervention research on the nursing consultation with people with diabetic foot in Brazil, revealing the need to conduct studies on this problem more often.

It stands out to reason that the nurse – when receiving a patient with DM – should focus on foot examination because of the prevalence of short-term amputations due to neuropathies and vasculopathies of the lower extremity. Thus, it is believed that the nurse, as a health care team member, can spread knowledge by promoting health education for people with diabetes mellitus and encouraging the adoption of safe self-care measures, assuming the nursing consultation as the appropriate moment for the development of this practice.

CONCLUSIONS

It was verified that the conduct used in the consultations performed by the nurses who participated in this research was not ideal because the anamnesis and the physical examination of the feet were not completely performed. The nurses skipped stages that are important for preventing the development of the diabetic foot or potential complications associated with it.

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