

## Atuação dos enfermeiros da estratégia saúde da família na prevenção do pé diabético

Practice nurse family health strategy in the prevention of diabetic foot

La práctica de la familia de la enfermera estrategia de salud en la prevención de pie diabético

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### ABSTRACT

**Objectives:** to identify guidelines provided by nurses for people with DM about foot care; investigate the frequency of the examination of the feet and the aspects evaluated; check which health education activities are carried out by nurses for people with DM. **Methods:** a descriptive study with a quantitative approach, performed with 38 nurses of the Family Health Strategy, through a questionnaire, during May to July/2013. Data were analyzed using descriptive statistics. This study was approved by the CCS CEP/UFPB, CAEE nº 03459112.1.0000.5188. **Results:** it was found that 26 (68,4%) nurses guide on the use of comfortable shoes; 19 (50,0%) nurses assess hair and nails monthly; 12 (31,6%) nurses develop guidelines as health education activity. **Conclusion:** role of nurses in the Family Health Strategy helps in the prevention of diabetic foot, providing the realization of self-care.

**Descriptors:** nursing; diabetes mellitus; diabetic foot; health education.

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## RESUMO

**Objetivos:** identificar orientações fornecidas pelos enfermeiros às pessoas com DM sobre o cuidado com os pés; investigar a frequência da realização do exame dos pés e os aspectos avaliados; verificar quais atividades de educação em saúde são realizadas pelos enfermeiros para as pessoas com DM. **Métodos:** estudo descritivo com abordagem quantitativa, realizado com 38 enfermeiros da Estratégia Saúde da Família, através de um questionário, durante maio a julho/2013. Os dados foram analisados com base na estatística descritiva. Estudo aprovado pelo CEP do CCS/UFPB, CAEE nº 03459112.1.0000.5188. **Resultados:** constatou-se que 26 (68,4%) enfermeiros orientam quanto ao uso de calçados confortáveis; 19 (50,0%) enfermeiros avaliam os pelos e as unhas mensalmente; 12 (31,6%) enfermeiros realizam orientações como atividade de educação em saúde.

**Conclusão:** a atuação dos enfermeiros da Estratégia Saúde da Família contribui na prevenção do pé diabético, proporcionando a realização do autocuidado.

**Descritores:** enfermagem; diabetes mellitus; pé diabético; educação em saúde.

## RESUMEN

**Objetivos:** identificar las pautas proporcionadas por enfermeras y para las personas con DM sobre el cuidado del pie; investigar la frecuencia del examen de los pies y los aspectos evaluados; comprobar que la educación sanitaria actividades se llevan a cabo por enfermeras y para las personas con DM. **Métodos:** estudio descriptivo, con abordaje cuantitativo, realizado con 38 enfermeros de la Estrategia Salud de la Familia, a través de un cuestionario, de mayo a julio/2013. Los datos se analizaron mediante estadística descriptiva. Este estudio fue aprobado por el CCS CEP/UFPB, CAEE No 03459112.1.0000.5188. **Resultados:** se encontró que 26 (68,4%) enfermeras guía sobre el uso de calzado cómodo; 19 (50,0%) enfermeras evalúan la mensual y las uñas; 12 (31,6%) enfermeras desarrollan pautas como la actividad de educación para la salud. **Conclusión:** el papel de las enfermeras en la Estrategia de Salud de la Familia ayuda en la prevención del pie diabético, que proporciona la realización de auto-cuidado.

**Descriptor:** enfermería; diabetes mellitus; pie diabético; educación en salud.

## INTRODUCTION

Regarded as a public health problem and highly prevalent in the world, diabetes mellitus (DM) figures as a chronic and degenerative metabolic disorder characterized by chronic hyperglycemia, originated by the destruction of the beta cells in the pancreas, resistance to the action of/or dysfunction of the insulin secretion.<sup>1-2</sup>

It is a non-communicable chronic disease with high morbidity and mortality rates, mainly from the insufficient peripheral vascularization, which determines the chronic complications that may compromise several organs. Such complications are nephropathy, retinopathy, neuropathy and macroangiopathies, which represent, respectively, one of the main determinants of chronic kidney failure, blindness, non-traumatic amputation of lower limbs and cardiovascular disease.<sup>3-6</sup>

Among the DM chronic complications, diabetic neuropathy stands out for being one of the most common, affecting about 50% of the individuals with diabetes, making the feet one of the most vulnerable areas of the body for individuals with DM. It is verified that over 15% of the individuals with DM are susceptible to developing feet ulcers at some point in their lives, which favors the occurrence of lesions, as well as peripheral vascular disease and deformities, named diabetic foot. These factors offer greater risk for non-traumatic amputations.<sup>7-11</sup>

Feet ulcers are characterized by cutaneous lesions with epithelium loss, which extend to the dermis, and may reach its deeper tissues, being able to reach bones and muscles; commonly, the ulcers precede 85% of the amputations and are a consequence of the combination of two or more risk conditions that act simultaneously, among which the peripheral neuropathy is the most important. Therefore, it is understood that the knowledge of the factors that contribute directly or indirectly for the development of feet injuries, as well of the prevention measures that can contribute to reduce the prevalence of injuries, and, consequently, of amputations.<sup>10</sup>

Potentializing the aggravation of DM, this chronic disease has been considered one of world's largest epidemics in the XXI century, representing a great challenge for all health systems, throughout the world. The International Diabetes Federation projections estimate that, by 2025, 380 million people will have diabetes, which would represent 7,3% of the world population aged between 20 and 79 years. Also, four million deaths are caused by this disease and its complications every year, representing 9% of the world total mortality, which brings negative consequences in the human, social and economic aspects.<sup>6-8</sup>

It is considered that prevention actions must be taken to avoid the occurrence of diabetic foot, in order to reduce the number of individuals that may have their limbs amputated, since the amputation procedure generates high costs to the healthcare sector, and also irreversible damages to the individuals submitted to the intervention. This is why its prevention has become more and more important, since the time and money spent are less if compared to the great hospital and drug expenses generated by the treatment, in addition to the smaller physical and psychosocial wear suffered by the patients and their families.<sup>12-13</sup>

Family Health, extended as reorientation strategy of the care model that provides health promotion, and disease prevention, recovery and rehabilitation actions, has a fundamental role in the diabetic user care, because this individual requires continuous care, permanent education and support to prevent acute complications and reduce the risk of chronic complications.<sup>5-6</sup> The nursing professional, reflected in the nurse, who is part of the cross-sectional team that composes the Family Health Strategy, has a critical role in the prevention of complications, because they are responsible for the full and holistic care of the DM patient;

the development of individual and/or collective educational measures; the nurse consultation, prioritizing the educational approach; the lower limb exam to identify the foot at risk, as well as specific care for the injured feet; the request of routine examinations, among other activities.<sup>6,14</sup>

From their attributions in the Family Health Strategy context, it is understood that the nurse has a determinant and proactive role in identifying the needs of health care, promotion and protection of the individuals with DM, in its different dimensions, confirming the importance of these professionals in the diabetic foot prevention.<sup>15</sup>

Before the importance of the care given by the nursing professionals to the individual with DM, through their caregiver and educator role, a question has arisen: How do Family Health Strategy nurses act in the prevention of diabetic foot?

In this perspective, this study has the following objectives: to identify the guidance provided by the nurses to individuals with DM on foot care; to investigate the frequency of foot exams and the aspects assessed; to verify which health education activities are performed by the nurses for individuals with DM.

## METHODS

Descriptive study with quantitative approach, conducted in Family Health Units in the city of João Pessoa – PB, Brazil, with nurses from the Family Health Strategy from Health District III (HD III), which represents the largest among the five health districts in the city. The study period was from May 2013 to July 2013.

The primary healthcare network in the city of João Pessoa is comprised of 180 Family Health Teams, with a coverage of 82%, which corresponds to the follow-up of 568.082 individuals. DS III is comprised of 53 Family Health Units (FHU), with a total of 60 nurses.<sup>16</sup>

To select the sample, the non-probabilistic was adopted, chosen by accessibility,<sup>17</sup> in which the subjects were selected according to the following inclusion criteria: at least one year in the Family Health Unit (FHU) and presence during the data collection period. The exclusion criteria were: less than a year in the FHU and absent from the location during the data collection. Therefore, the sample was constituted of 38 nurses.

To enable the data collection, a two-part questionnaire was used: the first part comprised of the sociodemographic characterization of the study participants (sex, age, time in the profession, practice at the work location); the second part comprised of variables related to the nurse's action on diabetic foot prevention (guidance on feet care; frequency of feet examination and the aspects assessed; healthcare education actions for individuals with DM).

In order to collect data from the nurses, a telephone contact was made, at first, with the matrix supporters of the

FHUs or the nurses themselves, when possible, to schedule the proper day and time for the activity.

The data collected were treated with the help of the *Statistical Package for Social Sciences* (SPSS) software, version 20.0, through descriptive analysis, by calculating the absolute and relative frequencies; when possible, for the sociodemographic data, central tendency measures (average) and dispersion (amplitude and standard deviation) were used, and the results were shown in tables and assessed against the literature applicable to the study.

For the research conduction procedure, we considered the ethical observations in the directives and regulating standards for researches involving human beings – National Health Council Resolution 466/12<sup>18</sup> and Federal Council of Nursing Resolution 311/2007,<sup>19</sup> especially as regards the participants' free informed consent form, data secrecy and confidentiality.

It should be noted that the research project was approved by the Ethics Committee of the Center of Healthcare Sciences of Federal University of Paraíba, under the number 0153/12, CAEE 03459112.1.0000.5188, and also authorized by João Pessoa's Municipal Health Office, as per process N° 06871/2013.

## RESULTS

38 nurses participated in the study, 36 (94,7%) females and 2 (5,3%) males, aged 26-65, with average and standard deviation of 46,29±10,43 years; time in the profession 2-32 years, with average and standard deviation of 19,89±7,85 years; having at least one year and a maximum of 13 years of exercise in the work location, with average and standard deviation of 6,24±4,10 years.

As regards the nurses' instructions on the steps to be taken to prevent the diabetic foot, we were able to verify that these professionals give specific instructions, comprehending the care directly associated with the feet, and also general instructions, comprehending the steps to properly control the DM. About the specific instructions, 26 (68,4%) nurses guide on the use of comfortable shoes; 17 (44,7%) on clipping the nails in a straight line; 13 (34,2%) on proper feet hygiene, 13 (34,2%) on feet hydration; 6 (15,8%) on the feet daily inspection; 5 (13,2%) to never walk barefoot. As regards the general instructions, 6 (15,8%) the nurses instructed on the regular physical activity; 4 (10,5%) on healthy feeding; 4 (10,5%) on the correct use of medication; 4 (10,5%) on glycemic control, as shown in Table 1.

**Table 1:** distribution of the instructions made by the nurses on the steps to be taken to prevent diabetic foot. João Pessoa - PB, Brazil, 2013.

SPECIFIC INSTRUCTIONS	n	%
<b>Use of comfortable shoes</b>		
Yes	26	68,4
No	12	31,6
<b>Clipping nails in straight line</b>		
Yes	17	44,7
No	21	55,3
<b>Proper foot hygiene</b>		
Yes	13	34,2
No	25	65,8
<b>Feet hydration</b>		
Yes	13	34,2
No	25	65,8
<b>Daily inspection of feet</b>		
Yes	6	15,8
No	32	84,2
<b>Not walk barefoot</b>		
Yes	5	13,2
No	33	86,8
<b>GENERAL INSTRUCTIONS</b>		
<b>Physical activity</b>		
Yes	6	15,8
No	32	84,2

<b>Healthy feeding</b>		
Yes	4	10,5
No	34	89,5
<b>Correct use of medication</b>		
Yes	4	10,5
No	34	89,5
<b>Glycemic control</b>		
Yes	4	10,5
No	34	89,5
<b>TOTAL</b>	<b>38</b>	<b>100</b>

Source: Direct Research, 2013.

As regarding the examination of the feet of individuals with DM, it was verified that 19 (50,0%) nurses assess the hair and nails on a monthly basis; 17 (44,7%) assess the integuments on a monthly basis; 16 (42,1%) assess the subcutaneous tissue on a monthly basis; 15 (39,5%) assess neuropathy once a month; 12 (31,6%) assess the vascular situation on a more regular basis, once a month; while 10 (26,3%) assess the bones at every six months, and 5 (13,2%) assess the sensitivity of the feet often on the first consultation, as shown in Table 2.

Table 2 also shows data that verifies that a large proportion of the nurses does not examine the feet, especially as regarding sensitivity, 27 (71,1%); the vascular situation, 12 (31,6%); the bone situation, 12 (31,6%); and the subcutaneous tissue, 10 (26,3%).

**Table 2 -** Distribution of frequency of feet examination of individuals with DM and aspects assessed by the nurses. João Pessoa-PB, Brasil, 2013.

Variáveis	Frequency of Feet Examination											
	1 <sup>st</sup> Consultation		Monthly		Biannually		1 <sup>st</sup> Consultation/ Monthly		Annually		Not assessed	
	n	%	n	%	n	%	n	%	n	%	n	%
<b>total</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>
Assessment of hair and nails	5	13,2	19	50	7	18,4	3	7,9	2	5,3	2	5,3
Assessment of integuments	2	5,3	17	44,7	7	18,4	9	23,7	1	2,6	2	5,3
Assessment of subcutaneous tissue	5	13,2	16	42,1	5	13,2	2	5,3	-	-	10	26,3
Assessment of neuropathy	4	10,5	15	39,5	8	21,1	7	18,4	-	-	4	10,5
Assessment of vascular situation	2	5,3	12	31,6	6	15,8	6	15,8	-	-	12	31,6
Assessment of bones	6	15,8	7	18,4	10	26,3	3	7,9	-	-	12	31,6

Frequency of Feet Examination													
Variáveis	1 <sup>st</sup> Consultation		Monthly		Biannually		1 <sup>st</sup> Consultation/ Monthly		Annually		Not assessed		
	n	%	n	%	n	%	n	%	n	%	n	%	
<b>total</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	<b>38</b>	<b>100</b>	
Assessment of sensitivity	5	13,2	1	2,6	4	10,5	1	2,6	-	-	27	71,1	

Source: direct research, 2013.

As regarding the healthcare educational activities for individuals with DM, 12 (31,6%) nurses give instructions such as healthcare education activity; 10 (26,3%) give educational lectures; 9 (23,7%) perform waiting rooms; 5 (13,2%) foster peer groups; 4 (10,5%) deliver brochures; 4 (10,5%) develop rounds of conversation, as shown in Table 3.

**Table 3:** distribution of nurses according to healthcare education activities for individuals with DM. João Pessoa - PB, Brazil, 2013.

HEALTHCARE EDUCATION ACTIVITIES	n	%
<b>Instructions</b>		
Yes	12	31,6
No	26	68,4
<b>Educational Lectures</b>		
Yes	10	26,3
No	28	73,7
<b>Waiting Rooms</b>		
Yes	9	23,7
No	29	76,3
<b>Peer Groups</b>		
Yes	5	13,2
No	33	86,8
<b>Delivery of Brochures</b>		
Yes	4	10,5
No	34	89,5
<b>Rounds of Conversation</b>		
Yes	4	10,5
No	34	89,5
<b>TOTAL</b>	<b>38</b>	<b>100</b>

Source: direct research, 2013.

## DISCUSSION

Established by COFEN Resolution – 159/96, the nursing consultation (NC) is an activity inherent to the nurse, who uses scientific knowledge components to identify situations of the health-disease process, to prescribe and implement nursing care that contributes with the health promotion, prevention and protection and the recovery and rehabilitation of the individual, family and community.<sup>20</sup>

In addition to this, the NC allows the nurse to perform his/her educator function, clarifying the patient's doubts on therapeutic, increasing the efficacy of the treatment adopted, whether pharmacological or not.<sup>21</sup>

Thus, it is understood that the instruction is a tool that allows the nursing professional to promote care through health education at the NC, because it provides the patient with knowledge about the means to control DM, contributing with the prevention of worsening conditions of this chronic disease. By providing the patient with instructions, prevention is also promoted, because it stimulates a spreader of information; also, it allows the individual to have a greater participation in the decisions and behaviors related to their health, as well as promoting self-care.<sup>1,21</sup>

As regarding diabetic foot prevention, the literature shows that the majority of the problems related to diabetic foot can be prevented by healthcare education oriented to feet care.<sup>21</sup>

In this sense, it was observed that the majority of the professionals promoted instructions on the use of comfortable shoes, which meets the recommendations necessary to prevent feet ulcers, since the use of therapeutic shoes for the neuropathic foot is considered one of the most important factors to prevent injuries in the lower limbs, because improper shoes expose the feet to extrinsic traumas and contribute as triggering factor in up to 85% of the feet ulcer cases; thus showing, also, the importance of not walking barefoot.<sup>22</sup>

Another point to be considered in feet care is the clipping in straight line of the nails; this instruction is an important strategy to prevent injuries, since diabetics tend to improperly clip their nails, exposing themselves to the development of wounds that are difficult to heal, as was verified in a study conducted in Minas Gerais, where 72% of the diabetics improperly clip their nails.<sup>23</sup>

Feet hygiene was also a target of instructions by the nurses, and it must be performed adequately, keeping the feet clean, especially among the interdigital spaces; thus contributing with the reduction of risk factors for larger injuries, because the improper feet hygiene predisposes to the occurrence of mycosis and infections, and these



conditions are favorable, especially in the presence of plantar pressure tactile insensitivity, ischemia or both, for metabolic unmanageability and also a possible systemic infection.<sup>24</sup>

Feet hydration is also a relevant instruction, since diabetic individuals suffer involvement of the sensitive, motor and autonomic fibers, reducing the sweat in the feet, making them dry and predisposing them to cracks and fissures, which increases the risk of injuries. Also, this instruction is important because studies show that 70,7% of the individuals with DM have dry skin and 50% have cracks in their feet.<sup>4</sup>

The nurses also instructed the individuals with DM to inspect their feet daily; the importance of the feet inspection should be emphasized because studies show that, although diabetic individuals consider feet care critical, they do not inspect them daily.<sup>25</sup>

In addition to the instructions mentioned about feet care, the nurses emphasized the importance of healthy eating, exercising, using medication correctly, contributing with glycemic control, as ways to prevent the occurrence of injuries in the lower limbs. These instructions confirm the prevention of the diabetic foot, since the poor disease control favors the occurrence of chronic DM complications.<sup>26</sup>

Thus, we notice that the nursing professionals instruct the diabetic patients through relevant and essential information for the maintenance of health and, consequently, the prevention of worsening. However, for these instructions to become applicable, the nurses must integrate the diabetic individual at all the stages of the educational process, because the patient needs to dominate knowledge and develop capacities that strengthen them to self-care, in order to assume the autonomy of their care.<sup>26</sup>

As regarding the performance of feet examination, we observe that the majority of the nurses fulfill the attributions recommended in basic healthcare, by performing the physical examination of the feet during the nursing consultation. This examination includes the inspection and palpation of integuments, hair and nails, subcutaneous cellular tissue, feet structure, and palpation of the posterior and feet tibial arterial pulses; as well as the assessment of the tactile, pressure and vibration sensitivity.<sup>4,22,26</sup>

As regarding the frequency of feet examination in its different aspects, the majority of the study sample performs it once a month, which is above the indication of the International Consensus on Diabetic Foot, which suggests that all diabetic individuals must be examined at least once a year to detect potential pathological changes in their feet. Except for patients with confirmed risk factors, who should be examined more frequently, at every one to six months.<sup>27-28</sup>

However, because a considerable part of the study nurses does not examine the feet, which has also been found in other studies, which show that some of the reasons for this situation are the lack of infrastructure, lack of knowledge, repressed demand and lack of consumable materials.<sup>4</sup>

In relation to the healthcare education activities, the nurses mentioned, more frequently, the instructions. As

shown in this study, during the nursing consultation, these professional address several critical subjects to prevent the diabetic foot. Thus, it is evidenced that the study subjects consider instruction a strategy to educate individuals diagnosed with DM, which contributes with the adoption of behaviors directed to self-care, since the more they have access to information and knowledge about their health condition, the more ability they will have to take steps to promote their quality of life; considering that the provision of instructions, along with the effective support by the nursing professionals are indispensable factors to provide the individual with knowledge, abilities, behaviors and motivation for self-care and self-control of the disease.<sup>29-31</sup>

The nurses also mentioned educational lectures that can be considered of low impact in the transformation of individual and collective realities, when the professional that gives them does not take the into consideration the socioeconomical context of the individuals with DM, and also does not allow a dialogue between the professional and the patient, thus becoming an activity limited only to the transmission of knowledge.<sup>32</sup>

Another educational activity performed is the waiting room, which can be described as a productive way to occupy an idle time in the FHUs, by transforming the waiting period for the consultations into moments that can provide educational and experience exchange processes among the users, allowing the exchange of popular knowledge and the nursing professional knowledge.<sup>33</sup>

The study nurses also mentioned peer groups; these groups allow the integration among people, through discussions about each person's daily living, as well as strategies they use to overcome the difficulties that they face while living with DM. This practice was performed in a FHU located in Florianópolis - SC, where the experience exchange among individuals with DM and between patient and professional allowed the study authors to better understand the universe of the individuals with DM and, thus, to be able to contribute with a more qualified care for this population.<sup>34</sup>

The delivery of brochures, indicated as a healthcare education activity by the study subjects, allows the individuals with DM and their family members to access critical information for the daily management of DM, supporting instructions provided by these professionals. However, in order to achieve the objective of assisting in the disease treatment and preventing its worsening, the material used needs to be compatible with the degree of understanding of the target public, easy to read and understand.<sup>35</sup>

The round of conversation is a space created for dialogue, where knowledge and experiences are exchanged among the participants and among patients and professional. This stimulates the construction of the patients' autonomy, through questioning, favoring the exchange of information and the reflection on the health-disease process.<sup>36</sup>

Conforming this finding, the authors affirm that the education practice based on dialogue and on the

exchange of experience and knowledge values the popular knowledge, as well as stimulates the respect for the diabetic patient's autonomy in their own healthcare, which must be considered at all healthcare activities performed. This allows an improvement in the life and health conditions of the individuals with the disease.<sup>37</sup>

In face of the above, the importance of health education in health promotion and prevention actions in basic care is understood, especially as regards chronic disease, mainly diabetes mellitus; since its high prevalence and morbidity and mortality requires policies oriented to the development of educational programs, which contemplate the actual needs of the affected individuals, their family members and the professionals involved.<sup>36</sup>

In this context, the role of the nurse in health education stands out, because the professional training of this professional comprehends the knowledge and the capacities needed to act in this area, integrating educational activities as a form of care. Ratifying this information, nursing theorists, especially Orem<sup>38</sup>, emphasizes the potential of this professional in the contribution with the individual learning, aiming at the promotion of their self-care and, thus, the prevention of DM worsening conditions, among them the diabetic foot.<sup>39-41</sup>

## CONCLUSION

Diabetes Mellitus, because of its chronic condition, can cause irreversible complications with great negative impact on the biopsychosocial and spiritual aspects of the individuals that have this condition, such as non-traumatic amputation resulting from diabetic foot.

Therefore, the support and care given by the nursing professional to the diabetic patient are critical in the treatment of this chronic disease, because its treatment directly affects the lifestyle of the individual and those who live with him/her, making it difficult to perform self-care and, therefore, favoring the occurrence of worsening conditions.

In this perspective, this study can verify the contribution of the Family Health Strategy nursing professionals in the diabetic foot prevention, since the findings show that they give instructions related to and in agreement with the literature about the steps that individuals with DM must take in order to reduce the risk of developing injuries in their feet. This helps with the prevention of diabetic foot and with the reduction of the negative impacts of this chronic disease on their quality of life.

Also, it was also shown that most of the nursing professional that comprise this study perform the examination of the diabetic patients' lower limbs often, which reduces the risk of developing injuries.

It should also be emphasized that the healthcare educational activities, in addition to the care oriented to nursing care, also have the inherent role of educator, promoting healthcare education activities that facilitate the

diabetic foot prevention and health promotion; as well as being the fundamental tools to motivate individuals with DM to have positive behaviors towards their health and to become key players in their own care.

However, the reality of the city in which the study was conducted points at the increasing number of non-traumatic amputations resulting from DM. Hence, it is important to conduct later studies that address the care by the Family Health Strategy nurses to individuals with DM, because they are scarce in the literature, which makes it impossible to know the actual situation of these professionals in the prevention of the diabetic foot.

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