

Risk practices for foot complications in people with type 2 Diabetes Mellitus



Práticas de risco para complicações nos pés de pessoas com Diabetes Mellitus tipo 2
Prácticas de riesgo para complicaciones en los pies de personas con Diabetes Mellitus tipo 2

Bruna Rykelly Ramos dos Santos^a

Luzia Karoline Teixeira Leite^a

Sóstenes Ericson Vicente da Silva^a

Thayse Gomes de Almeida^a

Josineide Soares da Silva^a

ABSTRACT

Objective: To learn about the risk practices for foot complications among patients with type 2 Diabetes Mellitus and the role of nursing in promoting self-care, in light of Dorothea Orem.

Method: Qualitative study, anchored in the methodological framework of Thematic Oral History. It was conducted through semi-structured interviews with 39 patients with type 2 Diabetes Mellitus in Arapiraca/AL, from August to September 2023. The interviews were transcribed, textualized and transcribed, based on the methodological framework.

Results: Participants presented risk practices for foot complications due to inadequate footwear, foot warmers, use of instruments on the feet, inadequate nail trimming and walking barefoot. Nursing, from Dorothea Orem's perspective, is essential for user self-care because it provides guidance that prevents or mitigates risk practices for foot complications.

Conclusion: Lack of adherence to self-care practices has a multifactorial etiology and results in a risk of foot injuries. It was demonstrated that Orem's theory serves as a guide for nursing actions, aiming at care and educational practices to mitigate these risks.

Descriptors: Self care. Health education. Diabetes Mellitus, Type 2. Diabetic Foot. Nursing care.

RESUMO

Objetivo: Conhecer as práticas de risco para complicações nos pés entre os pacientes com Diabetes Mellitus tipo 2 e o papel da enfermagem na promoção do autocuidado, à luz de Dorothea Orem.

Método: Estudo de abordagem qualitativa, ancorado no referencial metodológico da História Oral Temática. Foi realizado por meio de entrevistas semiestruturadas com 39 pacientes com Diabetes Mellitus tipo 2 em Arapiraca/AL, no período de agosto a setembro de 2023. As entrevistas foram transcritas, textualizadas e transcritas, com base no referencial metodológico.

Resultados: Os participantes apresentaram práticas de risco para complicações nos pés, devido a sapatos inadequados, aquecedor para os pés, uso de instrumentos nos pés, corte das unhas inadequado e andar descalço. A enfermagem, sob a perspectiva de Dorothea Orem, é essencial para o autocuidado dos usuários porque exerce orientação que impede ou mitiga práticas de risco para complicações nos pés.

Conclusão: A falta de adesão às práticas de autocuidado tem uma etiologia multifatorial e resulta em risco para lesões nos pés. Demonstrou-se que a teoria de Orem se constitui como norteadora para ações de enfermagem, visando práticas assistenciais e educativas para mitigar esses riscos.

Descritores: Autocuidado. Educação em saúde. Diabetes Mellitus tipo 2. Pé diabético. Cuidados de enfermagem.

RESUMEN

Objetivo: Conocer las prácticas de riesgo de complicaciones del pie en pacientes con Diabetes Mellitus tipo 2 y el papel de la enfermería en la promoción del autocuidado, a la luz de Dorothea Orem.

Método: Estudio cualitativo, anclado en la Historia Oral Temática. Se realizó a través de entrevistas semiestruturadas con 39 pacientes con Diabetes Mellitus tipo 2 en Arapiraca/AL, de agosto a septiembre de 2023. Las entrevistas fueron transcritas, textualizadas y transcritas, con base en el marco metodológico.

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^a Universidade Federal de Alagoas (UFAL). Campus Arapiraca. Arapiraca, Alagoas, Brasil

Resultados: Los participantes presentaron prácticas de riesgo para complicaciones en los pies por uso de calzado inadecuado, calentadores de pies, uso de instrumentos en los pies, corte inadecuado de uñas y caminar descalzo. Enfermería, para Dorothea Orem, es fundamental para el autocuidado de los usuarios porque brinda orientación que previene o mitiga prácticas de riesgo para complicaciones en los pies.

Conclusión: La falta de adherencia a las prácticas de autocuidado tiene una etiología multifactorial y resulta en riesgo de lesiones en los pies. Se demostró que la teoría de Orem constituye una guía para las acciones de enfermería, visando prácticas asistenciales y educativas para mitigar estos riesgos.

Descriptores: Autocuidado. Educación en salud. Diabetes Mellitus Tipo 2. Pie Diabético. Atención de enfermería

■ INTRODUCTION

Diabetes Mellitus (DM) is a metabolic disorder in which blood glucose levels remain high. It is classified as type 1 DM, gestational DM and type 2 DM. The latter, being the most common, is characterized by hyperglycemia, resulting from decreased insulin secretion by pancreatic β cells, associated with insulin resistance⁽¹⁾.

In recent decades, the prevalence of diabetes worldwide has increased significantly, mainly due to changes in people's lifestyles, which are increasingly directed towards sedentary behavior⁽²⁾. Data indicate that by the year 2045, 693 million people, aged between 18 and 99 years old, will live with diabetes, with prevalence being influenced by social, financial and development factors, as approximately 79% of people with diabetes live in emerging countries⁽³⁾.

Inadequate glycemic control in DM can cause several complications, including Diabetic Foot Syndrome, characterized by having a varied etiology. Diabetic Foot Syndrome is associated with the presence of diabetic neuropathy, which consists of loss of sensitivity, potentially leading to ulcers and/or amputations of the lower limbs⁽¹⁾. Among other factors associated with the occurrence of diabetic foot ulcers, peripheral arterial disease, increased plantar pressure, visual loss, and foot deformity are factors that increase the recurrence rates of foot ulcers after healing. In this context, self-care is a fundamental measure for preventing these ulcerations in the feet of patients with DM^(4,5).

Patients with better self-care performance are associated with good glycemic control, highlighting the need to monitor and advise individuals with DM regarding self-care and prevention of complications⁽⁶⁾. For Dorothea Orem, self-care refers to the care practices that an individual can perform for their own benefit. In this context, nursing care is necessary when the

patient has limitations or is unable to perform self-care actions, being indispensable due to the chronic nature of DM and the constant demand for consistent self-care practices⁽⁷⁾.

Nurses must assess the patient's ability to perform self-care actions, emphasizing the importance of their knowledge regarding their health condition. Based on this, the nursing professional must promote health education actions aimed at reducing harmful habits, such as smoking, and emphasize the importance of maintaining a healthy diet, as well as the need for daily assessment of the feet. Furthermore, self-care practices should also be encouraged, such as using appropriate footwear, properly cleaning and drying the feet, using moisturizers, except between the toes, trimming nails properly, and avoiding walking barefoot^(5,8,9).

In short, inadequate self-care practices for the feet lead to the risk of developing injuries, since the patient may already experience loss of sensitivity in the feet and other factors related to the impairment of sensory and motor fibers. These factors predispose to increased pressure areas on the feet. Therefore, self-care focused on foot comfort and hygiene is essential, as well as avoiding inappropriate contact with cutting instruments that result in non-healing wounds, which can progress into amputations⁽¹⁰⁾.

Knowing the potential for the development of Diabetic Foot Ulcers, it is therefore necessary to value nursing and its direct dialogue with patients, and from this interaction, understand them promoting strategies to improve educational practices to prevent this complication of diabetes. Thus, this study presents as a premise the nursing interventions, based on Dorothea Orem's theory, as necessary to encourage self-care practices for the feet among patients with diabetes. From this, the study aims to encourage the adherence of these nursing interventions in healthcare services, to address

the needs of adapting the care provided to patients with diabetes, preventing amputations and mortality.

Thus, the study had the following research questions: “What are the risk practices for foot complications among patients with type 2 Diabetes Mellitus?” and “What is the role of nursing in promoting foot self-care, in light of Dorothea Orem?”

The present study aims to understand the risk practices for foot complications among patients with type 2 Diabetes Mellitus and the role of nursing in promoting self-care, considering Dorothea Orem.

■ METHOD

Study design

Qualitative research based on the methodological framework of Thematic Oral History, which allows access to the social experiences of individuals or groups. Based on this, Oral History (OH) systematically records these lived narratives to generate knowledge and give a voice to marginalized segments of society. Thematic Oral History, in turn, seeks to collect clarifications on a previously established theme⁽¹¹⁾.

The concepts of qualitative research involve a polyphonic character, as it refers to various techniques, procedures, approaches and perspectives for conducting studies. The researcher plays an active role, in direct contact with the results and outcomes, and subjectively regarding the studied object⁽¹²⁾.

Study location

The research was carried out in a Basic Health Unit (BHU) in the urban area of Arapiraca/AL, selected due to the large scope of patients diagnosed with DM registered at the unit. The BHU consists of two teams, the first serves 303 registered patients with diabetes and the second serves 290. The city of Arapiraca is located in the Agreste region of Alagoas and has a population of 234,696 people⁽¹³⁾, with 100% coverage of the Family Health Strategy (FHS).

Study participants and eligibility criteria

The study included 39 patients of both sexes, aged 18 or older, diagnosed with type 2 DM, registered at the

Basic Health Unit. Patients with ulcers or who had a history of DFU and/or amputations resulting from diabetes complications were excluded, as well as those who had cognitive and/or mental difficulties in responding to data collection, aspects verified in the medical records.

No sample size calculation was made, since qualitative research is not concerned with probabilistic issues⁽¹²⁾. Saturation was considered, allowing the inclusion of participants until the objectives were achieved and no new themes emerged or until there were no new questions⁽¹⁴⁾.

Data collection

The sampling was conducted by convenience, based on the indication of the Community Health Agents (CHAs). The recruitment of participants occurred as follows: 1) Discussion with the CHAs about the pre-established research criteria; 2) Presentation of aspects of the BHU territory by the CHAs; 3) Analysis of medical records for eligibility; 4) Pre-selection of participants and scheduling of interviews based on consultations or home visits; 5) Introduction of the researcher to the potential research participants by a member of the multidisciplinary team of the Basic Health Unit. None of the pre-selected participants refused to participate in the study.

Data collection was conducted from August to September 2023 by the main researcher, a final-year nursing student, who was prepared to conduct the interviews based on the methodological framework and ethical guidelines. The research was developed through individual and semi-structured interviews based on the main theme: Risk practices for foot complications among patients with type 2 Diabetes Mellitus.

Potential volunteers were invited to participate in the study, and the objective and other information contained in the Informed Consent Form (ICF) were explained, and any doubts were clarified. The ICF was read and then the participant was asked to sign, consenting to the suggestions in the ICF, which consisted of two copies, one for the participant and the other for the researcher in charge. It is also stated that no previous relationship was established between the interviewer and the research participants.

During a home visit, an error occurred due to the lack of identification of a psychiatric diagnosis in the

medical records. It was found, from the beginning of the interview, that the patient had a psychiatric illness, which led to the interruption of the interview and destruction of the participant's data from the research database, with clarifications being made to the user and the family that accompanied him. This action complies with what is proposed in resolution 466/2012 of the National Health Council (*Conselho Nacional de Saúde* - CNS), which states that research should preferably involve individuals with full autonomy, and the criteria for exclusion from the study were met.

Initially, the questions focused on characterizing the sociodemographic profile using a questionnaire adapted from the IBGE Demographic Census⁽¹⁵⁾. Then, the following questions were addressed: "Do you usually walk barefoot?"; "Do you wear tight or loose shoes?"; "Do you use or have you ever used something to warm your feet?"; "Have you ever used any tool to remove calluses or blisters that have appeared on your feet?"; "How do you usually cut your toenails?". These questions were based on the guidelines of the International Working Group on the Diabetic Foot⁽¹⁶⁾.

The interviews were audio-recorded by an electronic device. The interviews lasted a total of 521 minutes and 33 seconds, which were fully transcribed by one of the study researchers. No pilot test was performed. However, as the interviews were conducted, the researchers discussed their progress, reflecting on gaps and possible ways to improve them. In this discussion space, the researchers also identified data saturation. Through the floating reading of the interviews as they were conducted and transcribed, it was possible to analyze each interview individually and its themes. Thus, with similar and consistent findings, without new reflections or interpretations arising on the studied topic, saturation was identified.

Procedures for analyzing and processing qualitative data

Thematic Oral History was used as a methodological approach to conduct the interviews and analyze the data. This methodological framework seeks to collect the interviewee's narrative to clarify a central theme. Such as collecting lived experiences, in this case:

possible practices that pose a risk for foot injuries. Details of the interviewee's personal life are of interest to the research if they are related to the objective. Additionally, the choice of the methodological framework was also due to its role in promoting inclusion of minorities, such as illiterate individuals and other marginalized groups. After all, sociocultural diversity was expected among the research participants⁽¹⁷⁾.

The interviews were recorded and later transcribed, textualized and transcreated, according to the Thematic Oral History methodological framework. Transcription consists of the first written version of the statements, literally reproducing what was said, including language errors, repetitions, and other markers of oral language. In textualization, the interviewer is omitted, and the narrator assumes ownership of the narratives, following the structure of a fluid written text without excessive markers of spoken language. In transcreation, the text is recreated for coherence and sense, aiming to make the narrative more complete⁽¹⁷⁾.

Thus, the interviews were transcribed with questions and answers, from the audio recordings, in an online Google document. The data was organized in increasing sequential order of each interview, in a single document, representing the transcription process, with the participants identified by initials of their names. Afterward, the entire text was reread to proceed with the textualization and transcreation stages, with the aim of carrying out the organizational measures established by the reference. A second document recorded the textualization, which involved removing oral language flaws to enhance the participants' statements, along with removing the questions.

Finally, a third document represented the transcreation, which improved the articulation of the statements for greater cohesion. Therefore, three documents representing each stage mentioned were organized, as recommended in the Thematic Oral History. The research project coordinator guided and reviewed all the stages. It is important to highlight that the analysis process may or may not exist in the OH, since there are groups that defend the creation of documentation as sufficient to achieve the OH objectives. In this research project, the analysis stage was adopted, which began with the exhaustive reading during the process

of documenting from the transcription, textualization and transcreation⁽¹¹⁾.

The OH is composed by records of subjectivities, but it is possible to perceive similar experiences and contexts in the statements, which requires interpretations of these subjectivities by the researcher. Through this process, it was possible to reflect and discuss the interviews with the entire research team, for interpretations and, through an inductive process, selection of the statements that represented the experiences and perceptions of the group of interviewees regarding the research theme. The use of Thematic Oral History necessitated an objective approach to elucidate the research theme, which was achieved by the results presented in this study⁽¹¹⁾.

Ethical aspects

The study was approved by the Research Ethics Committee (REC) of the *Universidade Federal de Alagoas* (UFAL), under Certificate of Presentation for Ethical Appreciation (CAAE) 68522023,0,0000,5013 and opinion no.6,261,578, in compliance with the ethical precepts related to resolution 466/2012 of the National Health Council (CNS) and its complementary 510/2016.

The participants' anonymity was ensured using initials for their names.

■ RESULTS

Among the 39 participants included in the final study sample, the majority were female, corresponding to 74.35% (n=29), with a predominant age range of 60-79 years (n=26). Regarding marital status, there was a prevalence of married individuals, corresponding to 46.15% (n=18). Most participants had incomplete elementary education, corresponding to 38.46% (n=15), followed by complete elementary education (n=7) and basic education (n=7). Regarding religion, most interviewees declared as being Catholic, corresponding to 61.53% (n=24). Regarding occupation, most of them were unemployed and/or were retired, corresponding to 79.48% (n=31). The occupations mentioned were entrepreneur, market vendor, salesperson, caregiver and Community Health Agent (CHA). Furthermore, 17.94% (n=7) of the participants lived alone, while 48.71% (n=19) lived with 1-2 people in the same household and 30.76% (n=12) lived with 3-4 people in the same household (Table 1).

Table 1 – Sociodemographic profile of a Basic Health Unit in the city of Arapiraca, state of Alagoas, Brazil, from August to September 2023.

VARIABLES	N	%
Sex		
Male	10	25.64%
Female	29	74.36%
Age group		
40 to 59 years	11	28.21%
60 to 69 years	13	33.33%
70 to 79 years	13	33.33%
80 to 90 years	2	5.13%
Marital status		
Single	6	15.38%
Married	18	46.15%
Divorced	5	12.82%
Widowed	10	25.64%

Table 1 – Cont.

VARIABLES	N	%
Education level		
Complete elementary school	7	17.95%
Incomplete elementary school	15	38.46%
Complete high school	5	12.82%
Higher education	3	7.69%
Basic education	7	17.95%
Reads and writes	1	2.56%
Illiterate	1	2.56%
Religion		
Catholic	24	61.54%
Evangelical	12	30.77%
No religion	3	7.69%
Occupation		
Unemployed / Retired	31	79.49%
Entrepreneur	3	7.69%
Market vendor	1	2.56%
Caregiver	1	2.56%
Community health agent	1	2.56%
Salesperson	2	5.13%
Number of individuals living in the household		
Live alone	7	17.95%
1 to 2 residents	19	48.72%
3 to 4 residents	12	30.77%
5 to 6 residents	1	2.56%

Source: Research data, 2023.

In the following statements, the interviewees shared their experiences and knowledge about foot self-care practices. The reason for not walking barefoot was reported based on the perception of personal preference, without considering potential risks, as observed in the following statement:

No, I don't like it. (F.B.S., 71 years old, female)

The statements also reflected fear regarding walking barefoot, one justification given was the fear of falling.

God help me, I've never put my foot on the ground. Never, not inside the house, not anywhere. (S.L.T., 73 years old, female)

No. I don't walk barefoot, inside the house, wherever I go, wherever I go, I'm afraid of falling, I don't go barefoot at all. (M.M., 69 years old, female)

The fact of walking barefoot was sometimes justified by symptoms in the feet or by being confined to the home environment.

A lot (laughs) It's hard to me when I'm at home wearing shoes. (M.S.L.O., 61 years old, female)

Inside the house, I only walk barefoot, my feet burn. (M.L.F., 71 years old, female)

Only here inside the house. (C.R.S., 70 years old, female)

When asked about the type of footwear they wore, the statements highlighted to be looser, tighter or considered comfortable shoes. The statements reflected discomfort from wearing tighter shoes, not directly relating to possible foot problems due to diabetes.

Yeah... with some space. Flats, with a little looseness. (H.L.R.N., 69 years old, male)

As incredible as it may seem, all the sandals I have, they all bother me, most of them are tight. No, not tight in size, sometimes tight... it's a strap, elastic, something like that, that bothers me, but I wear them. (M.S.L.O., 61 years old, female)

With some space, I wear shoes that are... usaflex, right? Because... um... according to my foot because I have bursitis in my feet. (M.G.S., 50 years old, female)

For now... I used to wear it, that's what hurt me when it was too tight, then I gave it to my grandson and now I only wear this. (E.F.S., 66 years old, male)

Tight. (C.R.S., 70 years old, female)

Concerns were also reported about choosing the right shoes based on the possibility of injuring the feet.

I also... I usually wear sandals, shoes, sandals, more comfortable, that don't hurt, that don't bother. (A.C.S., 46 years old, female)

A little looser because I'm afraid of squeezing my feet and hurting them. (S.L.T., 73 years old, female)

As evidenced in the following statements, the use of foot warming practices was seen as beneficial by the participants, being a palliative or curative alternative for certain health conditions. These practices were reported to have been adopted under the influence of their social circles.

Once, I used warm water, but it was a while ago, but it was because they told me to, because I was in a lot of pain, so you know, that's when I used it, I also have a very serious spine problem. (V.F.S., 66 years old, female)

I've done it once, when I had Chikungunya, and I was recovering, only this time. My feet swelled, so I just put warm water on them. (R.M.C.R., 57 years old, female)

Sometimes because of this dryness, cracking of my feet, I put my feet in hot water with apple cider vinegar. (M.S.L.O., 61 years old, female)

I've already used some hot water compresses, but my feet are hot, they're hot, you can see with your finger that the water is hot, then you can see the heat together (laughs). (M.L.F., 71 years old, female)

Only when they hurt do I put them on, I apply a compress. I have a spur, I have... some stuff here that I don't even know the name of, so I use it, you know? Every now and then, when they get inflamed, I like to use it. (M.C.B.S., 66 years old, female)

The use of sharp instruments was mentioned as an alternative to remove calluses or blisters. Moreover, in the case that the foot is not affected by such a condition, there was no need to use sharp instruments.

Look, the blister, it was a lot, but I'm like this... if I move... look, it was this big, look, they... look, do you see this here? It was just one, but there's some ointment that the doctor prescribed, she didn't even go to the pharmacy, she had to order it, but you put it on, it heals. (M.L.C.S., 79 years old, female)

No, occasionally... I used to take them off when I wore shoes a lot, working, had to wear boots, and then some calluses would form. (H.L.R.N., 69 years old, male)

No, nothing appears on my feet. (F.M.L.A., 72 years old, female)

No, I have never had blisters on my feet, nor calluses, I am very careful. (A.C.S., 46 years old, female)

There were reports of cutting the nails on the sides and a lack of concern about adopting proper techniques for cutting the nails, as shown in the following statements:

I cut them, I cut... normally, I cut, I don't, I don't cut straight because the nails are ingrown. I also cut the corners. (E.R.G.O., 74 years old, female)

Ah, anyway, I just grab the scissors and go for it. (E.A., 67 years old, male)

Despite reporting different techniques for cutting nails, including on the corners, feelings of fear and concern about not injuring themselves were noted.

I cut them straight, but I also cut them in the corners, but I do it myself, I don't tell anyone to cut them, because I'm afraid of cutting my skin and getting a wound. (S.L.T., 73 years old, female)

That one was kind of messed up, I cut it any way I could, I cut it so it wouldn't grow in, because I'm afraid. (E.F.S., 66 years old, male).

No... the manicure does it, she cuts them in the corners too, sometimes there's a... sometimes there's a... an ingrown nail, right, they take it out, but be very careful, I tell them. (G.T.D., 78 years old, male)

Straight. Not in the corners. (M.D.S., 48 years old, female)

Beyond the fear of injuring themselves, experiences of injuries caused by nail cutting were reported, as shown below:

It cuts in the corners and sometimes it hurts. She cuts them, and when she cuts them too much in the corner, sometimes they get a little sore the next day. (M.S.L.O., 61 years old, female)

When they're really small, I just file them, and they're just a little scraped, so I use the file, I file them all down, so I don't cut them with the scissors, because sometimes I've cut myself and didn't feel it, and then it bled a lot, so I stopped doing that. I used to cut them in the corners, look, that's what bled in the corners, but I used to put that... I used that... sunflower

oil, which heals them, you know, I've always taken great care of my feet. (M.L.F., 71 years old, female)

The following statement highlights the need for assistance in performing a healthcare activity. From this, the family member establishes the technique used and performs the care:

Ah... now I can't see well, but I ask my... my sister to cut them. She cuts them in the corners. (M.G.N., 63 years old, female)

■ DISCUSSION

The Brazilian Diabetes Society (*Sociedade Brasileira de Diabetes* - SBD) issued a statement on the increase in cases diagnosed with diabetes, especially in the female population. The diagnosis of diabetes grew among women more rapidly, from 7.8% in 2019 to 9% in 2020. Compared to men, there was an increase of 0.2%, from 7.1% in 2019 to 7.3% in 2020⁽¹⁸⁾. These data corroborate the present study, in which most participants were female. It is clear that men have difficulty seeking healthcare services and adhering to treatment, which may be related to the need for control and independence⁽¹⁹⁾. Therefore, it is suggested that there are fewer men diagnosed with diabetes when compared to women due to the lower demand for healthcare services and lower chance of diagnosis.

In this study, most participants were elderly, which aligns with data from the International Diabetes Federation Atlas, where one in five people aged 65 to 69 years live with diabetes, it is projected that the number of individuals over 65 years old with diabetes will reach 195.2 million by 2030 and 276.2 million by 2045⁽²⁰⁾.

In a cross-sectional study aimed at evaluating the factors that influence the overall quality of life of elderly individuals, among the variables analyzed, marital status corresponded to a higher percentage of widows, which is the opposite to the data in the present study. When comparing marital status and quality of life, there was no statistically significant association⁽²¹⁾. However, support networks are important to mitigate feelings related to loneliness, since these can lead to harm to health and quality of life⁽²²⁾. At the same time, data

indicates that aging may be related to a decrease in the general perception of health, and age is a positive predictor of perceived social support⁽²³⁾. Marital status is assumed to be an important aspect for assessing support and protection, as stable social networks may not have been built throughout life⁽²²⁾.

The educational level of the participants involved, was mostly incomplete elementary education. Therefore, the majority did not complete high school or entered higher education, which predisposes them to low health literacy and influences their understanding of health information. Therefore, there is a need to promote health literacy by nurses, using an effective methodology according to the participants' educational level. Low literacy as a condition for self-care is addressed in a study conducted with adults with diabetes, where satisfactory health literacy was associated with more than 4 years of education and an age less than or equal to 59 years. The authors emphasize the need for educational actions aimed at preventing complications associated with Diabetes Mellitus, understanding education factors as influencers in the process of health knowledge⁽²⁴⁾.

Most participants declared having a religion. This aspect is fundamental in building a health support network, constituting an option for support, attributing assistance in living with the illness, with greater capacity to cope with adversities⁽²⁵⁾. In the sample studied, the participants were predominantly unemployed and/or retired, which can be inferred from the age group data, with a prevalence of elderly individuals. This factor influences health literacy and indicates the need for support in self-care and health care practices. Consequently, these patients tend to stay at home, so planning is needed to encourage them to seek healthcare services.

Most participants lived with someone at home, an important aspect, considering that most of the sample studied consisted of elderly individuals. In this sense, the importance of home care and the possible need for a caregiver is evident, considering that family members also form a relevant emotional network. Physiological aspects of aging, such as the frailty of the elderly, which increases with age, require a caregiver to perform daily activities, including self-care, aiming at a better quality of life for the elderly⁽²⁶⁾.

Specifically regarding practices that pose a risk for foot complications, foot self-management is a fundamental principle for preventing ulcers⁽¹⁶⁾. Some of the foot self-care practices, such as not walking barefoot, using the right type of footwear, not using any means to warm the feet or any instrument to remove calluses or corns, and cutting toenails straight, received positive comments, which corroborate with recommended practices.

However, negative practices were also observed, such as using hot compresses on the feet and some instrument to remove calluses, walking barefoot, wearing shoes that are too tight or too loose, cutting nails with the risk of causing injuries, as well as the reports of foot injuries resulting from cutting nails.

A systematic review aimed at understanding the gaps between the American Diabetes Association's recommendations on foot self-care and the perception and actions taken by patients with diabetes identified deficits in participants' knowledge and perceptions about self-care practices. Some studies found that patients did not understand the importance of doing foot care. Furthermore, patients with diabetes and diabetic foot ulcers believed that healthcare professionals would be solely responsible for their recovery, considering it unnecessary to take actions on their own⁽²⁷⁾.

It is observed that, often, patients do not engage in actions to manage their self-care. The biomedical model prevails through the overvaluation of curative and pharmacological actions⁽²⁸⁾ and the view of the physician as the holder of knowledge, seen as the only one capable of ensuring the patient's health⁽²⁷⁾. Thus, health promotion, disease prevention actions, and basic self-care measures, such as proper nutrition and physical exercise, may not be perceived by patients as effective for improving health conditions.

Furthermore, data from a systematic review revealed that most patients based their foot care practices on personal beliefs, such as cleaning their feet daily with alcohol and soaking their feet in hot water. This last practice was also observed in the present study, constituting a negative practice that increases the development of ulcers. The patients' goals were comfort, prevention and healing of Diabetic Foot Ulcers, based on their own perceptions⁽²⁷⁾. Educational strategies to raise awareness

and knowledge about diabetes and foot care practices should be implemented to mitigate misinformation and risk practices for foot complications⁽²⁹⁾.

A study conducted in a Family Health Strategy unit in a city in the southwest of Minas Gerais showed that 89% walked barefoot, a harmful factor for the feet also identified in the present study. Additionally, 98.4% reported not using warm packs for their feet. Thus, the importance of nurses and other professionals in the Family Health Strategy is highlighted for providing guidance and health education to patients, along with the need for periodic training for the healthcare team⁽³⁰⁾.

Using the Polish version of the Diabetic Foot Disease and Foot Care Questionnaire (DFDFC-Q), a Polish study identified aspects of poor foot care, including nail cutting, failure to dry feet, and walking barefoot. It was also revealed that only 61.8% of participants dried between their toes and 45.3% inspected the soles of their feet daily. Adherence to self-care was directly associated with high levels of education and patient knowledge, as well as with not having a partner and adherence to dietary recommendations⁽³¹⁾. This corroborates, once again, that education and health literacy are key factors for engaging in healthy practices.

A cross-sectional study conducted in northern Iran with 375 patients with type 2 DM found that most participants, corresponding to 91.2%, had deficits in self-care practices. It is worth noting that one of the worst scores was related to proper nail cutting, which corresponded to 25.9% of the participants. Additionally, most of the participants had a low level of education and, consequently, a lack of knowledge regarding self-care practices, data that can also be correlated with the low education level of most participants in this study. Another important point was that the average practice score was lower than the average knowledge score⁽³²⁾.

The literature indicates that a significant proportion of patients present variations in foot care, with 29.5% demonstrating inadequate care, 49.6% moderate care and only 20.8% presenting adequate care. Additionally, 47.86% of patients take care of nail trimming, while 70.97% have the habit of walking barefoot. Negative practices related to nail trimming and the habit of walking barefoot are also common. Furthermore, patients whose nails are trimmed by other people are often among those who undergo amputations⁽³³⁾.

Such factors may correlate with the present study, as some participants reported having their nails cut by other people, with descriptions of cuts on the sides and also complications resulting from this inadequate nail cutting. Therefore, there is a need for guidance not only for patients, but also for their support network. After all, this network can also include caregivers, in the case of those who need help to exercise self-care or are totally dependent.

Regarding the treatment adherence of patients with type 2 DM, several factors are related to non-adherence to treatment, such as sociodemographic, clinical, psychological and behavioral factors⁽³⁴⁾, aspects characterized and discussed in this study. There are several challenges to treatment adherence and nursing care is essential to promote educational strategies that enable adherence to self-care and therapeutic regimen⁽³⁵⁾.

In turn, Orem's self-care theory encompasses self-care, the activity of self-care, and the therapeutic self-care requirement. The activity of self-care constitutes the action, the ability to engage in self-care, and this ability is affected by conditioning factors, which are present and differentiate the participants of the study in question, influencing their knowledge and worldview, such as age, gender, development and health status, sociocultural orientation, healthcare system factors, family system factors, standards of living, environmental factors and adequacy and availability of resources⁽⁷⁾.

The self-care theory is based on the principle that human beings have their own abilities to develop self-care practices. When unable to perform self-care, they can benefit from the actions of the nursing team⁽³⁵⁾. Therefore, it is possible to mention a limitation regarding nail trimming, in which one of the interviewees reported a deficit in vision, which would hinder the performance of this self-care activity. In this situation, the role of nursing aims to provide the necessary assistance to the patient, with the aim of protecting and recovering their health, recognizing that the patient has debilitating factors that prevent them from performing self-care practices.

The term "wearing comfortable shoes" was mentioned and is associated with a study conducted in Ethiopia, in which interviewees from Dessie reported that they wore comfortable shoes, according to the size of their feet, and open, non-slip sandals when they were

at home. However, some participants reported walking barefoot inside the house, due to the presence of carpets, as well as when household cleaning was being done, which would make it difficult to wear shoes that had already been worn outside the house. The authors concluded that the patients lacked knowledge about self-care and how it is practiced⁽³⁶⁾.

The use of inadequate footwear and the habit of walking barefoot are the main causes of trauma leading to ulcers in people with diabetes and loss of foot sensitivity. Therefore, there is a need for proper footwear, remembering that the footwear should have an internal length 1-2 cm longer than the foot, the height should leave enough space for all toes and the internal width should be equal to the width of the foot at the metatarsophalangeal joints⁽¹⁶⁾.

When asked about possible harmful foot practices, the interviewees in this study mentioned practices of warming the feet, using hot compresses, in addition to removing calluses with some tool. Some of these patients reported that they received this recommendation from acquaintances. Thus, it is possible to identify a fragility in health education and in the role of health-care professionals, including nurses, in dialoguing with popular knowledge to guide practices that promote well-being and health care.

In the support-education system, the person is capable of and needs to learn how to perform self-care measures. Dorothea Orem also discusses the role of healthcare services in preparing individuals and family members to understand the self-care process, which is a requirement as the first level of prevention. In this study, it is observed that some of the interviewees had prior knowledge about self-care measures, while the lack of knowledge of other participants corroborates a deficit in their self-care. For example, the interviewees who reported warming their feet with hot compresses or other methods certainly did not know that this is a harmful practice and poses a risk for the development of Diabetic Foot Syndrome⁽⁷⁾.

Negative results regarding self-care practices can be associated with a lack of guidance and health education actions. Nursing needs to intervene in this issue, given the transformative role and character that

can be adopted. This aspect is noted in a quasi-experimental study in Egypt, in which one group received a nursing intervention on a digital platform and the other group received standard care. The platform included educational content on self-care, real-time glucose monitoring, an interactive questionnaire and a forum for group discussions. Standard care consisted of routine visits, printed educational materials and in-person guidance⁽³⁷⁾.

These actions, from the study mentioned above, resulted in progress regarding self-care behaviors, more pronounced in the group receiving digital intervention⁽³⁷⁾. Despite this, regardless of the means of nursing intervention, the results are evident in promoting patient health. Based on this study, it is also possible to reflect on the advances in nursing care and the incorporation of new technologies that facilitate assistance.

A quasi-experimental before-and-after study investigated the relationship between the time of contact of patients with diabetes with educational interventions and the influence on self-care variables. The intervention activities were developed in three meetings, using active methodologies, with themes on healthy eating and physical activity, use of oral medication, insulin therapy and foot care. There was an increase in the average self-care scores between the initial and final moments⁽³⁸⁾.

It is important to consider that Orem identified five methods of support: 1) acting or doing for the other; 2) guiding the other; 3) supporting the other; 4) providing an environment for personal development and 5) teaching the other. From this, it is evident that there is a need to apply these methods so that patients adhere to foot self-care practices, given the identification of harmful actions and risk for ulcers. Nursing actions, beyond teaching, must also guide and create the necessary environment, due to low health literacy, especially among the elderly population and those with low levels of education⁽³⁵⁾.

The limitations of this study refer to the restriction of the sample to a Basic Health Unit, which consequently limits the population studied to the urban center. A broader scope of the research, in different units and also including rural areas, could identify important factors for improving the study.

■ CONCLUSION

This study allowed us to understand the risk practices for foot complications among patients with type 2 DM registered in a Basic Health Unit in Alagoas, based on the identification of harmful foot practices. Actions such as walking barefoot, wearing tight shoes, warming the feet, handling sharp instruments to remove calluses or blisters, and inadequate techniques for trimming nails were reported by the participants. These actions can result in ulcers and lead to amputations, impairing the user's quality of life. Based on the narratives of the interviewees, several factors related to the etiology of the self-care deficit can be understood, such as a possible lack of awareness of the harm caused by some practice with the feet and external influences for the adoption of these practices that pose a risk of injury, which are considered beneficial by the interviewees. Additionally, it was possible to observe the adoption of a positive practice only as a matter of personal choice or preference, without recognizing the direct relationship with health.

Regarding health education, it is important to emphasize that nursing intervention plays a fundamental role in the re-education of these patients. Through a structured educational approach, patients can become active agents of their own self-care, learning to recognize and avoid risky practices. Patient education and proper management of diabetic foot ulcers are recommended to reduce, delay or prevent complications. This will enable a better quality of life, with reduced morbidity and mortality among patients with diabetes.

Based on the results and conclusions, it is proposed nursing care based on theories such as Orem's, given the educational role and promotion of self-care, key aspects for the adoption of healthy practices among patients with Diabetes Mellitus. In this context, nurses must apply the Nursing Process and develop interventions based on Orem's nursing theory. Therefore, the care plan should assist the patient in whatever is necessary to exercise self-management practices in health, in addition to provide comprehensive or partial assistance for self-care activities, when the patient is unable to perform them independently. Actions to promote self-care

should not be limited to the consultation space and can be transposed to health education or literacy actions in waiting rooms and educational groups at the BHU, as well as outreach activities, reaching out to the community in other social spaces.

Scientific knowledge and the care provided by nurses are essential for the health field, given direct contact with the patient, with a welcoming and humanized approach. Based on this, the study highlights about deficits in the care provided by the nurses and in the self-care of their patients, demonstrating their interrelationship, proposing new approaches that seek to minimize risk practices among diabetes patients, transforming them into active agents in promoting their self-care.

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■ **Authorship contribution:**

Conceptualization: Bruna Rykelly Ramos dos Santos, Josineide Soares da Silva
Data curation: Bruna Rykelly Ramos dos Santos, Josineide Soares da Silva
Formal analysis: Bruna Rykelly Ramos dos Santos
Investigation: Bruna Rykelly Ramos dos Santos
Methodology: Bruna Rykelly Ramos dos Santos, Thayse Gomes de Almeida, Josineide Soares da Silva
Project administration: Bruna Rykelly Ramos dos Santos, Thayse Gomes de Almeida, Josineide Soares da Silva
Resources: Bruna Rykelly Ramos dos Santos, Sóstenes Ericson Vicente da Silva, Thayse Gomes de Almeida, Josineide Soares da Silva
Supervision: Sóstenes Ericson Vicente da Silva, Thayse Gomes de Almeida, Josineide Soares da Silva
Validation: Bruna Rykelly Ramos dos Santos, Luzia Karoline Teixeira Leite, Sóstenes Ericson Vicente da Silva, Thayse Gomes de Almeida, Josineide Soares da Silva
Visualization: Bruna Rykelly Ramos dos Santos, Luzia Karoline Teixeira Leite, Sóstenes Ericson Vicente da Silva, Thayse Gomes de Almeida, Josineide Soares da Silva
Writing - original draft: Bruna Rykelly Ramos dos Santos, Luzia Karoline Teixeira Leite
Writing - review & editing: Bruna Rykelly Ramos dos Santos, Luzia Karoline Teixeira Leite, Sóstenes Ericson Vicente da Silva, Thayse Gomes de Almeida, Josineide Soares da Silva

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■ **Corresponding author:**

Bruna Rykelly Ramos dos Santos
E-mail: brunarykelly@hotmail.com

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