

Lifestyle and self-care in the patient at risk for diabetic foot: A review of the literature

Estilo de vida y autocuidado en el paciente con riesgo del pie diabético: Revisión de la literatura

Estilo de vida e autocuidado no doente em risco de doença do pé diabético: Uma revisão da literatura

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Abstract

Introduction: Vascular and neuropathic complications of diabetes cause diabetic foot, being the main risk factor for non-traumatic amputations. **Objective:** To analyze the available scientific evidence on lifestyle and self-care of patients at risk of diabetic foot. **Methodology:** Literature review using the preferred reporting items for systematic reviews and meta-analyses methodology; published in EBSCO host, Google academic, PubMed, Scielo and Elsevier; in English and Spanish from 2016 to 2022. Nursing articles were included, mentioning two or more variables of interest: diabetes mellitus, lifestyle, diabetic foot, and self-care; duplicates, no access, and gray literature were eliminated. From a total of 1,080 articles, 14 were included that met the inclusion criteria. Checklists were used to assess the quality of the manuscripts used. **Results:** Systematic reviews, observational, experimental and qualitative studies showed evidence that self-care can be influenced by culture, context and knowledge deficit, being this a risk factor for the development

of diabetic foot. An association was found between the risk of diabetic foot with years of diagnosis, inadequate self-care of the feet and advanced age. **Conclusion:** The association between the self-care deficit and the risk of diabetic foot in the elderly was evidenced. It is recommended to broaden the search and include people under 40 years of age in order to establish effective preventive measures and reduce the risk of diabetic foot.

Key words: Diabetes mellitus; Lifestyle; Diabetic foot; Self-care (DeCS).

Resumen

Introducción: Las complicaciones vasculares y neuropáticas de la diabetes causan el pie diabético, siendo el principal factor de riesgo para amputaciones no traumáticas. **Objetivo:** Analizar la evidencia científica disponible sobre el estilo de vida y autocuidado de los pacientes con riesgo de pie diabético. **Metodología:** Revisión de la literatura mediante la metodología preferred reporting items for systematic reviews and meta-analyses; publicada en EBSCO host, Google académico, PubMed, Scielo y Elsevier; en inglés y español desde 2016 a 2022. Se incluyeron artículos de enfermería, que mencionaran dos o más variables de interés: diabetes mellitus, estilo de vida, pie diabético y autocuidado; se eliminaron duplicados, sin acceso abierto y literatura gris. De un total de 1,080 artículos se incluyeron 14 que reunieron los criterios de inclusión. Se emplearon listas de verificación para evaluar la calidad de los manuscritos utilizados. **Resultados:** Las revisiones sistemáticas, estudios observacionales, experimentales y cualitativos mostraron evidencias de que el autocuidado puede verse influenciado por la cultura, contexto y déficit de conocimientos, siendo este factor de riesgo para el desarrollo de pie diabético. Se encontró asociación entre el riesgo de pie diabético con años de diagnóstico, autocuidado inadecuado de los pies y edad avanzada. **Conclusión:** Se evidenció asociación entre déficit de autocuidado y riesgo de pie diabético en el adulto mayor. Se recomienda ampliar la búsqueda e incluir personas menores de 40 años para establecer medidas preventivas eficaces y reducir el riesgo de pie diabético.

Palabras clave: Diabetes mellitus; Estilo de vida; Pie diabético; Autocuidado (DeCS).

Abstrato

Introdução: As complicações vasculares e neuropáticas da diabetes causam o pé diabético, sendo o principal fator de risco para amputações não traumáticas. **Objetivo:** Analisar a evidência científica disponível sobre o estilo de vida e o autocuidado dos doentes em risco de pé diabético. **Metodologia:** Revisão da literatura utilizando a metodologia preferred reporting items for systematic reviews and meta-analyses; publicada no EBSCO host, Google Scholar, PubMed, Scielo e Elsevier; em inglês e espanhol de 2016 a 2022. Foram incluídos artigos de enfermagem que mencionavam duas ou mais variáveis de interesse: diabetes mellitus, estilo de vida, pé diabético e autocuidado; foram removidos os duplicados, sem acesso e literatura cinzenta. De um total de 1.080 artigos, 14 que preencheram os critérios de inclusão foram incluídos. Foram utilizadas listas de verificação para avaliar a qualidade dos manuscritos utilizados. **Resultados:** Revisões sistemáticas, estudos observacionais, experimentais e qualitativos mostraram evidências de que o autocuidado pode ser influenciado pela cultura, contexto e défices de conhecimento, que são factores de risco para o desenvolvimento da doença do pé diabético. Foram encontradas associações entre o risco de pé diabético e os anos de diagnóstico, o autocuidado inadequado dos pés e a idade avançada. **Conclusão:** Verificou-se a associação entre défices de autocuidado e o



risco de doença do pé diabético em idosos. Recomendamos o alargamento da pesquisa a pessoas com menos de 40 anos de idade, de forma a estabelecer medidas preventivas eficazes e reduzir o risco de doença do pé diabético.

Palavras-chave: Diabetes mellitus; Estilo de vida; Pé diabético; Autocuidado (DeCS).

Introduction

According to the International Diabetes Federation (IDF) ⁽¹⁾ in 2021, about 537 million people are living with Diabetes Mellitus (DM) and this number is expected to increase to 643 and 783 million by 2030 and 2045, respectively. Vascular and neuropathic complications of DM cause diabetic foot (DF) with the presence of difficult-to-heal ulcers and this being the main risk factor for non-traumatic amputations ⁽²⁻⁵⁾. The global prevalence of DF is estimated to be approximately 6%, according to a 2016 systematic review and meta-analysis ⁽⁶⁾. This is a difficult disease to address because of the number of procedures, disciplines involved and the impact on lifestyle ⁽⁷⁾.

Lifestyle is the set of decisions made by each individual that will affect his health and over which he has some degree of voluntary control ⁽⁸⁾. Thus, an inadequate lifestyle has brought as a consequence that the figures of DM continue to increase and therefore its complications. However, educating the patient to opt for a healthy lifestyle is not the only thing to do; it is necessary to address the concept of self-care in order to know the patient's condition and his or her capacity for self-care against the disease, in order to help the patient to achieve and maintain self-care actions with the aim of preserving life, recovering from the disease and facing its consequences ⁽⁹⁾.

The importance of this review is to be a reference on the current literature encompassing the variables: self-care and lifestyle in the patient at risk of DF and thus emphasize in clinical nursing practice the usefulness of publicizing and disseminating validated instruments and international recommendations for the implementation of appropriate self-care measures in the prevention of DF. In view of the above, the research question arises: How is the lifestyle and self-care in the



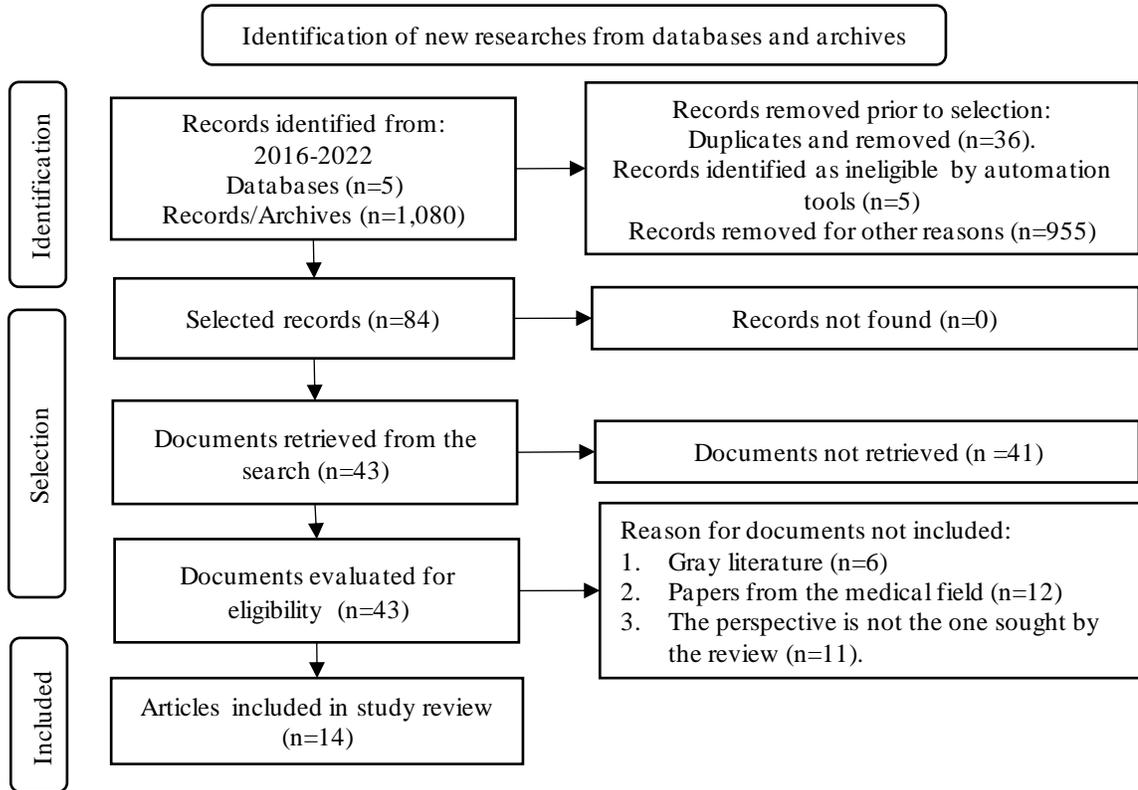
patient at risk of DF? Therefore, the present objective was established to analyze the available scientific evidence on the lifestyle and self-care of patients at risk of DF.

Methodology

The study design was a review of the literature, the guiding questions were formulated prior to the search for articles: How is the lifestyle and self-care in patients at risk of DF? How is the self-care of women compared to the self-care of men? What is the risk of DF and what are the main symptoms referred to in the literature? What does the scientific literature refer to lifestyle and self-care in patients at risk of DF? Data collection was performed in October 2022, in the databases Virtual Health Library (VHL), National Library of Medicine (NIH), EBSCO host database portal (part of the corporation founded by Elton Bryson Stephens, hence the acronym EBSCO: Elton B. Stephens Company), Scientific Electronic Library Online (Scielo), PubMed Central (PMC), and Google Scholar.

Inclusion criteria included documents in English and Spanish, between the years 2016 to 2022, nursing articles that mentioned two or more variables of interest: Self-care, lifestyle and DF risk; articles without open access, duplicates, gray literature and that did not meet the objective of the present review were excluded. The following descriptors were used in Spanish and English: diabetes mellitus, lifestyle, diabetic foot, diabetic foot ulcer, self-care, self-help. In addition, the Boolean operators AND, NOT and OR were used. The Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) flowchart was used to structure the research according to the checklist items, in addition to contributing to the formulation of the search strategy ⁽¹⁰⁾. From the search through the consulted databases, when applying the inclusion criteria of start question, year and key words, only 14 articles were selected, (Figure 1).



Figure 1. Results from 2016 to 2022, in accordance with the PRISMA 2020 Declaration ⁽¹⁰⁾.

Source: Own-development

Through critical reading, characteristics were observed and grouped by affinity of each one of them, and the evidence included was organized in a table, mentioning the study, design, journal and published year, country of origin, level of evidence, instruments used in the study, sample and main results. To assess the methodological quality of the manuscripts included, we used the PRISMA statement ⁽¹⁰⁾ for systematic reviews; Melnyk's levels of evidence ⁽¹¹⁾, Strengthening the Reporting of Observational studies in Epidemiology (STROBE) ⁽¹²⁾ statements for observational studies; the Consolidated Standards of Reporting Trials statement for experimental studies (CONSORT) ⁽¹³⁾ and the Consolidated criteria for reporting qualitative research (COREQ) ⁽¹⁴⁾ checklist for qualitative studies.



Results

According to the design of the articles, 64.3 % of the articles corresponded to observational studies (cross-sectional ^(2,15-21), cases and controls ⁽²²⁾), 14.3 % to systematic reviews, meta-analyses ^(23,24), and experimental studies ^(5,25) respectively and 7.1 % to qualitative ethnographic studies ⁽²⁶⁾. On the other hand, 64.3 % corresponded to the Spanish language and 35.7 % to English. In relation to their origin it was found that 35.7 % were articles from Colombia ^(2,5,17,18,26), 7.1 % were from countries such as Mexico ⁽¹⁶⁾, Brazil ⁽¹⁵⁾, Peru ⁽¹⁹⁾, Chile ⁽²¹⁾, Cuba ⁽²⁵⁾, Korea ⁽²⁰⁾, State of Palestine ⁽²²⁾, Iran ⁽²⁴⁾ and Ethiopia ⁽²³⁾ each.

According to the hierarchical evidence classification system of the articles ⁽¹¹⁾, 64.3 % met the characteristics of level VI evidence ^(2,15-21,26), 14.3 % with level V ^(23,24), 7.1 % with level IV ⁽²²⁾ and 14.3 % was level III ^(5,25). For systematic reviews and meta-analyses, a score of 16 ⁽²⁴⁾ and 22 points ⁽²³⁾ was obtained. For observational studies, scores of 19 points ^(20,22), 17 points ^(15,21), 16 points ^(2,16,17), 14 points ⁽¹⁸⁾, and 12 points ⁽¹⁹⁾ were obtained. As for the experimental studies, scores of 17 points ⁽⁵⁾ and 16 points ⁽²⁵⁾ were obtained, and finally for the qualitative study, 24 points ⁽²⁶⁾ were obtained, (Table 1).

Table I. Summary of the evidence included in the literature review. 2022, (n=14).

TITLE, AUTHORS	JOURNAL, COUNTRY, YEAR	STUDY TYPE	EVIDENCE LEVEL	INSTRUMENTS	n	RESULTS
Diferencias entre mujeres y hombres diabéticos en el autocuidado de los pies y estilo de vida Rossaneis, et al. ⁽¹⁵⁾	Revista Latino Americana de Enfermagem Brasil, 2016	Quantitativa Cross-sectional	VI	Sociodemographic, clinical, lifestyle, foot self-care and clinical lower limb examination variables.	1,515 individuals with DM2	In women there was a higher prevalence of foot care compared to men for injury prevention. In lifestyle, physical activity and unhealthy habits (smoking and excessive alcoholic beverages) were higher in men. Women used diets in the food control and more frequently when performing laboratory tests. More than half (men/women)



Case-control study of risk factors and self-care behaviors of foot ulceration in diabetic patients attending primary healthcare services in Palestine Salameh, et al. (22)	Journal of Diabetes Research Estado de Palestina, 2020	Cases and controls	IV	Sociodemographic variables, lifestyle, foot examination and physical assessment, DF self-care behavioral scale (DFSBS).	413 patients with Diabetes Mellitus type 1 (DM1) and DM2. Control group (205) without ulcers. Case group (208) with ulcers.	maintained body mass indexes (BMI) such as overweight and obesity. The factors that were associated with foot ulceration were: smoking, sensory loss (monofilament, vibration, monotony and pain), loss of pedal pulse, presence of calluses, nephropathy, retinopathy and neuropathy. There was a positive association between development of DF ulcer and inadequate foot self-care.
Factores conductuales y biológicos que influyen sobre el riesgo de pie diabético en adultos en etapa de prevejez y vejez Medina-Fernández, et al. (16)	Salud Uninorte México, 2022	Quantitativa correlacional	VI	Diabetes Lifestyle Measurement Instrument (IMEVID) and the Diabetes Self-Care Barriers Scale (EBADE).	105 individuals with DM2	Some predictor variables: barriers to self-care in DM, low-density cholesterol and BMI. Healthy lifestyle was found in 24.8 % of the patients. It was found that 7.6 % had moderate risk of DF, 67.6 % high risk and 24.8 % maximum risk. Lifestyle was related to self-care barriers in DM2.
Knowledge and practices for the prevention of the diabetic foot Ramírez-Perdomo, et al. (2)	Revista Gaúcha de Enfermagem Colombia, 2019	Descriptive, correlational cross-sectional	VI	Author-designed instrument	304 DM2 patients	The knowledge of DF prevention was low and medium, while its practices were moderately adequate. There was a correlation between level of education and level of knowledge ($p < 0.01$), a lower level of education becomes a factor that negatively affects the knowledge possessed by individuals. Women acquired multiple roles which could have a negative effect on the maintenance of self-care practices. Correlation between self-care practices and sex.



Intervención educativa de autocuidado en la prevención del pie diabético. Quemba-Mesa, et al. ⁽⁵⁾	Av Enferm Colombia, 2021	Quantitative type before and after	VI	Risk classification and self-care level	79 DM2 patients	73.4 % had tingling, 17.7 % had claudication, 31.6 % had no previous education and 26.6 % had inadequate footwear and stockings. The most frequent classification (36.7 %) of DF risk was zero (No sensory neuropathy), 22.7 % had peripheral vascular disease and 15.1 % had a history of ulcer or active ulcer.
Experiencias de cuidado cultural en personas con diabetes y el contexto familiar, con enfoque Lehninger Briñez, et al. ⁽²⁶⁾	Cultura de los cuidados Colombia, 2016	Qualitative ethnographic type	VI	Interview	10 participants with DM2	There were visible patterns of family support through caring behaviors towards people with DM2, the family member took care of the diet and supported the person alone and when he/she saw him/her unwell. Self-care practices: they used plants and herbs for self-care and foot care. Fatigue was found in the use of medications due to the frequency and number of tablets; they took daily walks to justify exercise.
Prevalence and associated factors of foot ulcer among diabetic patients in ethiopia: a systematic review and meta-analysis Tolossa, et al. ⁽²³⁾	BMC Public Health Etiopía, 2020	Systematic review and meta-analysis	V	Sociodemographic and clinical characteristics, self-care practices, prevalence of DF.	11 articles	The overall magnitude of DF ulcer was 12.9% in patients from Ethiopia. DF ulcer was associated with presence of callus, poor self-care practice and age <45 years. There was no association of DF ulcer and sex.
Relación entre agencia de autocuidado y riesgo de pie diabético en personas con diabetes mellitus Quemba ⁽¹⁷⁾	Revista cultura del Cuidado Colombia 2016	Quantitative Correlational	VI	Self-care agency rating scale, DF risk category identification scale of the international consensus on DF	59 patients with DM2	Self-care agency was found to be very good in 23.7%, 74.6% good and 1.7% low. Risk classification: 17 % had no sensory neuropathy, 7 % had sensory neuropathy, 10 % had some deformity, 31 % had peripheral vascular disease, 25 % had PD and 10 % had a history of amputation.



						There was a negative correlation in self-care agency and DF risk classification.
Asociación entre prácticas de autocuidado del pie y riesgo de pie diabético Ramírez-Perdomo, et al. (18)	Congreso de la Sociedad Cubana de Enfermería. 2022 Colombia, 2021	Quantitative Descriptive cross-sectional	VI	Foot self-care practices in patients with DM2 and the Foot-Risk-Patient instrument.	302 DM2 patients	81.1% presented mild risk of DF and 17.9% moderate. There was an association between DF risk and years of diagnosis, marital status and final self-care score. No association was found between DF risk and monthly income, marital status, schooling, socioeconomic stratum and sex.
Actividades de prevención primaria del pie diabético y actividades de autocuidado en pacientes con diabetes tipo 2 en el Hospital II Clínica Geriátrica San Isidro Labrador, Essalud Mesares Damiano, et al. (19)	Revista Científica de ciencias de la salud. Perú, 2017	Quantitative Cross-sectional descriptive	VI	Instrument prepared.	55 nurses and 56 hospitalized patients with DM2 without the presence of DF	The 46.4 % of patients obtained moderate self-care, 30.4 % high self-care and 23.2 % low self-care. In BMI, 45.5 % were overweight. In foot care, 69.6 % checked their feet, 42.9 % did not internally check their footwear before putting it on and 60 % did not apply moisturizing creams.
Factors related to severity of diabetic foot ulcer: a systematic review Jalilian, et al. (24)	Dove Press, Irán, 2020	Systematic review	V	Wagner classification system, Clinical and sociodemographic characteristics	7 articles	Influencing factors: smoking, high BMI, hyperglycemia, type of DM treatment, other complications in patients, advanced age and inadequate vascular status.
Factors related to self-care behaviors among patients with diabetic foot ulcers Kim, et al. (20)	Journal of Clinical Nursing WILEY Corea, 2019	Cross-sectional descriptive	VI	Self-care behavior instrument, Lazarus and Folkman stress questionnaire, Family support instrument	131 outpatients and inpatients with DF ulcers	In DF care, patient scores were high in wearing soft socks and not exposing the feet to dangerous or extreme temperatures. There were low scores on moisturizing the feet and treating foot calluses. Foot care behavior was associated with experience of diabetes education, hospitalization or its complications, current



Autocuidado en usuarios diabéticos, en centros de salud urbanos	Revista Cubana de Medicina General Integral Chile, 2019	Cuantitativo, descriptivo y transversal	VI	Cuestionario para autocuidado	60 personas	treatment method, glycosylated hemoglobin (HbA1C) and perceived family support. In lifestyle, 60 % consumed one bread per day, 53.3 % consumed fruit daily, 85 % consumed one vegetable per day, 51.7 % consumed red meat once a week, 36.7 % consumed 3 to 4 glasses of water per day, 85 % did not consume alcohol. In foot care, 58.3 % knew the proper footwear, 88.3 % performed correct hygiene of their feet, 58.3 % attended control with the podiatrist on a regular basis.
Parada-Jiménez, et al. ⁽²¹⁾						
La educación del paciente diabético de debut para prevenir las úlceras del pie diabético	Acta Médica del Centro Cuba, 2020	Quantitativo Design Quasi-experimental	VI	Knowledge, concept, diet, physical exercise, treatment, complications, self-management techniques, general and foot care.	93 patients	At the beginning 36.6 % did not comply with the established diet, and later 74 % took care of their diet correctly. 28 % practiced physical exercise, later this figure increased to 80.6 %. 24.7 % did not perform a foot self-examination, after the study 87.1 % did it regularly. 75.7 % administered their medication regularly, after the study, 89.2 % complied adequately with their treatment. The level of self-care was inadequate in both groups (control group: 29.3 %; experimental group: 30.6 %); after the program, the experimental group had an adequate level of self-care in 75.9 %, the control group maintained the same figures.
García-Velázquez, et al. ⁽²⁵⁾						

Source: Own development



Characteristics of studies: It was identified that in the case-control study⁽²²⁾ in 413 patients (control n=205 consisted of patients without foot ulcer; cases n=208 with ulcer no smaller than 0.5 cm²), showed that the control group had higher mean scores on the diabetic foot self-care behavior scale (DFSBS) than the case group $P < 0:001$.

Referring to the systematic review and meta-analysis⁽²³⁾, it was found that DF ulcer was significantly associated with the presence of calluses on lower limbs, poor self-care practices and advanced age. In addition, it was found that sex was not significantly associated with the presence of DF ulcer. Another systematic review⁽²⁴⁾ showed that the factors that influenced the severity of DF ulcers were smoking, high BMI, hyperglycemia, type of treatment, patient complications, advanced age and vascular status. In cross-sectional research with a sample of 1,515 individuals aged 40 years or older, a significantly higher prevalence of foot self-care deficits and less healthy behavior was established in men⁽¹⁵⁾. While in 302 participants it was found that there was no association between the risk of DF with the sex variable; in addition, they suggested a possible association with the degree of risk and final self-care score ($p < 0.10$)⁽¹⁸⁾.

In a descriptive study⁽²⁰⁾ performed in 131 patients, the patients showed that foot care behaviors were associated with the experience of diabetic education-hospitalization-complications, method of treatment, glycosylated hemoglobin (HbA1C) levels and perceived family support. Another quantitative research⁽¹⁹⁾ in 56 patients hospitalized with DM2 when analyzing the self-care practices performed, it was found that 46.4 % had moderate self-care practices, the most frequent with 69.6 % was to check the feet; additionally, another observational study⁽²¹⁾ with 60 patients, found that 88.3 % maintained correct foot hygiene; the attendance to the podiatrist was presented in 58.3 %. In spite of the data obtained, 22.4 % presented foot lesions, of which only 61 % used the treatments.



In an educational intervention ⁽⁵⁾ with 79 participants, half of them were placed in high DF risk categories where the most frequent classification was zero due to the absence of sensory neuropathy. In a qualitative study ⁽²⁶⁾, they found that, in self-care practices, family members only intervened when the patient found it difficult to perform self-care activities; there were deficiencies in foot self-care practices, they referred to the use of traditional herbal remedies of their culture in foot care and in the control of hyperglycemia.

Moreover, a correlational study ⁽¹⁶⁾ reported that the risk of DF was related to self-care barriers in DM, diabetes ($r=0.224$, $p<0.5$) and BMI ($r=0.255$, $p<0.5$). In addition, it was found healthy lifestyle and a maximum risk of DF in 24.8 % of cases. Lifestyle was related to self-care barriers in DM. Additionally, in 304 patients there was statistical correlation between level of education and knowledge ($p<0.01$), also self-care practices and sex became factors that could have a negative effect on both knowledge and maintenance of self-care practices ⁽²⁾.

In another correlational study in 59 patients ⁽¹⁷⁾, when evaluating self-care agency, it was found that 74.6 % obtained a good level according to the self-care agency assessment scale (ASA); 31 % obtained a 2b risk classification when presenting peripheral vascular disease in the lower limbs; likewise, a negative statistical correlation was shown in the variables self-care agency and DF risk categorization.

Within the quasi-experimental studies ⁽²⁵⁾, it was shown that education after an educational intervention had an impact on the incorporation of new practices and thus decreased the risk of DF.

Discussion

The main self-care activities most frequently performed by patients were drying the interdigital spaces after bathing and the least frequent was walking barefoot at home or in other places ⁽¹⁹⁾.

While in some other studies the main prevention activity chosen was recognizing when there are glucose fluctuations and knowing what to do in the situation, and the least frequent was recognizing



the changes caused by the disease itself at the emotional, personal, and occupational levels ⁽⁵⁾. It was found that slightly less than half of the participants received education on the prevention of DF ⁽²⁷⁾. In others, slightly less than half of the patients were unaware of the disease and its complications ⁽²⁸⁾. It has been seen that patients who do not perform the necessary care for the prevention of DF are those who do not have knowledge about DM2, in addition it can be identified as a risk factor, because it leads to a lack of access to information for an adequate practice of self-care of the feet and an adequate metabolic control in the development of complications, in particular of DF ^(2,29). However, there are studies that mentioned that despite the fact that the participants have a good to fair knowledge about the pathology, little less than a quarter of the sample carry out preventive measures ⁽³⁰⁾.

Furthermore, in a qualitative study ⁽²⁶⁾ they mentioned that the type of self-care in the practice of foot care and DM2 control can be influenced by the cultural and family context; this is similar to other studies where foot care was associated with the perceived family support for the disease by being involved when the patient is unable to perform such activities ⁽²⁰⁾.

There was a difference in the level of knowledge before and after an educational intervention, the difference was statistically significant; after an educational intervention, a high level of knowledge was achieved by the patients in slightly more than half of the sample ⁽²⁵⁾. Thus, therapeutic education programs with group interventions benefit patients in empowerment, in addition to being more likely to positively modify their self-care and therefore their lifestyle ⁽²⁵⁾.

Regarding self-care and lifestyle in relation to sex, it is essential to evaluate self-care in people, since this would identify both strengths and weaknesses existing in the lifestyle, so as to improve good practices and eradicate concepts related to sex, such as aspects of diet, correct footwear and adherence to pharmacological treatment ⁽²¹⁾. It was reported regarding lifestyle, through the use of an elaborated instrument that regular physical activity, drug addictions such as alcohol and tobacco



consumption were more prevalent among men. In relation to self-care, women presented greater prevalence in the use of diets for food control and in self-care of the feet; however, men showed better habits in relation to adequate footwear. The variables related to self-care were found to be associated with sex, so that men presented greater self-care deficits and consequently are considered a risk factor for amputation in people with DF ⁽¹⁵⁾.

Besides, another study ⁽²⁾ mentioned that there was a statistical correlation between self-care practices and sex, since women in their daily life acquire multiple roles that can be considered as a negative effect on the maintenance of self-care practices. Even so, results present in another research ⁽¹⁸⁾ mentioned that sex had no relevance in risk prediction, in comparison to other variables that did increase the risk of DF such as years with diagnosis, final DF risk score and age of the patients; as well as what was reported in another research ⁽²²⁾ where an association was also found between longer duration of DM2 and the development of DF ulcer.

Referring to the risk level, a study conducted in Colombia in 2016, studied the classification of risk of developing DF in 59 individuals with a median age of 63 years through the instruments established in the International Consensus on DF, in which the participants were most frequently found at Risk 2b presenting peripheral vascular disease ⁽¹⁷⁾. Along the same lines, an educational intervention ⁽⁵⁾ was conducted in 79 patients with a median age of 62 years, with a higher frequency of risk level zero without the presence of sensory neuropathy. Another study from Colombia ⁽¹⁸⁾ found a low risk level in 81 out of 100 individuals for developing DF. However, in a study conducted in a Mexican population, high risk and maximum risk of developing DF were found more frequently by using the risk assessment scale of the foot in diabetic patients ⁽¹⁶⁾. Regarding the figures present, according to one study ⁽³¹⁾, the highest prevalence of DF was found in North America, followed by Africa, Asia, Europe and Oceania.



Regarding the most common symptoms presented by the participants, in a median age of 62 years were neuropathy, vascular condition, skin changes and inadequate footwear; however, in other studies the most frequent symptomatology was tingling and alteration in foot pulses ⁽⁵⁾. Similarly, age was a variable of interest in the increased risk of DF, it was mentioned that both peripheral arterial disease and diabetic neuropathy affect people from the fifth decade of life onwards ⁽¹⁸⁾, in addition to the fact that age influences the severity of DF ulcers ⁽²⁴⁾.

Regarding the relationship between self-care and the risk of DF, in a Palestinian sample it was reported that there was a positive association between the development of DF and inadequate self-care of the feet ⁽²²⁾. While a study in Colombia revealed that when measuring the relationship between DF risk categorization and self-care agency, a high negative correlation was found between the variables ⁽¹⁷⁾. Similarly, in a systematic review and meta-analysis, DF ulcer was associated with the presence of poor self-care practice ⁽²³⁾. For this reason, the association between risk and practices allows us to identify relevant aspects during patient care and therefore the measurement of both variables allows us to detect deficiencies that require a different strategy ⁽¹⁸⁾.

Conclusions

An association between self-care deficit and the risk of DF was found, especially in the elderly. Most of the articles were developed in Colombia and only one in Mexico. This article mentions the factors that influence the risk of DF; however, it only includes the pre-elderly and old age periods. Consequently, new research is needed to include the variables lifestyle, self-care and risk of DF, as well as to expand the age range to establish effective early measures and reduce the risk of DF; in addition to emphasize health personnel to establish strategies and carry out improvement plans in order that patients lead a healthy lifestyle, perform appropriate self-care activities and podiatric care such as nail trimming, footwear, and skin as preventive measures against the development of DF.



Conflict of interests

The authors stated that there was no conflict of interests.

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