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EVALUATION AND MEASURES FOR PREVENTION AND TREATMENT OF SKIN XEROSIS IN ELDERLY: AN INTEGRATING REVIEW

Avaliação e medidas de prevenção e tratamento da xerose cutânea em idosos: uma revisão integrativa

Evaluación y medidas de prevención y tratamiento de la xerosis cutánea en idosos: una revisión integrativa

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ABSTRACT

Objective: To analyze the scientific production in nursing about the care for the evaluation, prevention and treatment of cutaneous xerosis in the elderly. **Method:** Integrative review carried out in the Latin American and Caribbean Literature on Health Sciences, Virtual Electronic Library Online, PubMed Central and Cumulative Index to Nursing and Allied Health Literature, from August to December 2017. **Results:** Analyzed 14 articles from which emerged three categories: Oral and topical hydration for the care of the elderly with cutaneous xerosis; The use of instruments and care for xerosis related to the feet; and finally Hygiene measures and product selection / indication processes. **Conclusion:** Nursing care should focus on education for self-care, with emphasis on hydration of the feet as well as indication and orientation about the use of products in order to minimize complications from xerosis.
Descriptors: Nursing; Skin aging; Elderly health.

RESUMO

Objetivo: Analisar a produção científica em enfermagem acerca dos cuidados para a avaliação, prevenção e tratamento da xerose cutânea em idosos. **Método:** Revisão integrativa realizada nas bases Literatura Latino-Americana e do Caribe em Ciências da Saúde, Biblioteca Virtual *Scientific Eletronic Library Online*, PubMed Central e *Cumulative Index to Nursing and Allied Health Literature*, no período

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de agosto a dezembro de 2017. **Resultados:** Foram analisados 14 artigos dos quais emergiram três categorias: A hidratação oral e tópica para o cuidado do idoso com xerose cutânea; A utilização de instrumentos e o cuidado a xerose relacionada aos pés; e por fim Medidas de higiene e processos de escolha/indicação de produtos. **Conclusão:** Os cuidados de enfermagem devem estar voltados à educação para o autocuidado com ênfase na hidratação dos pés bem como na indicação e orientação acerca do uso de produtos com a finalidade de minimizar as complicações oriundas da xerose.

Descritores: Enfermagem; Envelhecimento da pele; Saúde do idoso.

RESUMEN

Objetivo: Analizar la producción científica en enfermería acerca de los cuidados para la evaluación, prevención y tratamiento de la xerosis cutánea en ancianos. **Método:** Revisión integrativa realizada en las bases Literatura Latinoamericana y del Caribe en Ciencias de la Salud, Biblioteca Virtual Scientific Eletronic Library Online, PubMed Central y Cumulative Index to Nursing and Allied Health Literature, en el período de agosto a diciembre de 2017. **Resultados:** Fueron se analizaron 14 artículos de los cuales surgieron tres categorías: La hidratación oral y tópica para el cuidado del anciano con xerosis cutánea; La utilización de instrumentos y el cuidado de la xerosis relacionada a los pies; y por último Medidas de higiene y procesos de elección / indicación de productos**. Conclusión:** Los cuidados de enfermería deben estar orientados a la educación para el autocuidado con énfasis en la hidratación de los pies así como en la indicación y orientación acerca del uso de productos con la finalidad de minimizar las complicaciones oriundas de la xerosis.

Descriptores: Enfermería; Envejecimiento de la piel; Salud del anciano.

INTRODUCTION

As humans age, they experience inevitable physiological changes, some of them capable of triggering progressive functional impairment. The changes observed over the years may cause increased vulnerability and increased susceptibility to disease.[1]

The demographic transition process points to the growth of the elderly population, which has been constantly discussed within the health care context. This is a global reality, which causes important repercussions considering socioeconomic aspects. The decreased birth and mortality rates and changes present in the morbidity profile associated with improvements in the quality of life corroborate this reality.[2]

Considering the physical changes caused by the aging process, dry skin or dry skin is usually frequent and, despite not causing any dysfunction, can generate discomfort for the elderly due to changes in the visual and sensory aspects of the skin. Among the characteristics of dry skin, the following can be observed: scaling, cracks, tension, hyperemia and occasional bleeding.[3]

The skin, an organ of the integumentary system, is indispensable to human life and forms a barrier between the internal organs and the external environment, participating in many vital functions. For the skin to function properly, two basic processes act together: cleansing and skin hydration. Cleansing contributes to the removal of external debris, natural skin secretions, and microorganisms. Hydration plays a major role in keeping the water content inside of the epidermis and keeping the epidermal barrier within normal parameters. Dry skin compromises the quality of life and affects 15% to 20% of the world's population. It can interfere with work productivity severe cases, especially when the hands are affected.[4,5]

Nurses are responsible for assessing the skin condition and establishing an accurate diagnosis for proper care. Nursing is based primarily on human, individual and collective care, involving direct care, as well as the management of services and its nursing team. It is guided by ethical and legal precepts to ensure the people's well-being and/or the reestablishment of their health.[6]

To assess, prevent or maintain skin integrity, knowledge and skills are required for identifying risk factors, physiology, anatomy, as well as the stages of the healing process. This knowledge is essential to diagnose the type of injury and to indicate appropriate technologies for prevention and treatment. It is important to emphasize that these are dynamic events; therefore, nurses should follow the evolution of medical science and technology, in addition to the Nursing Care Systematization through the Nursing Process, which can be regarded as a guiding method for the care provided.[7]

Skin lesions demand great attention from the team members, have a high cost and need a continued education with quality for their prevention and treatment. Nevertheless, little research on products and technologies used by nursing professionals for dry skin and consequent skin protection has been carried out.[8]

Bearing in mind the aforementioned, the following guiding question was developed: "What are the nursing care actions toward evaluation, prevention and treatment of dry skin among the elderly population according to the literature?"

Hence, the objective of this study was to conduct an integrative review to identify the nursing care actions taken during the evaluation, prevention, and treatment of dry skin among elderly people.

METHODS

This is an integrative review of the literature since it presents the synthesis of multiple published studies. It allows the identification, evaluation, and synthesis of the knowledge produced on a given theme and enables general conclusions regarding a specific area of study, aiming at the search for scientific evidence and the deepening of the theme for clinical practice in the field of nursing.[9]

It went through the following steps: identification of the theme and selection of the research hypothesis or question, the definition of the problem, search strategies, definition of keywords and definition of the inclusion and exclusion criteria for the study. The studies were selected by reading their titles, abstracts, and keywords. A synthesis matrix was then created to organize the studies found. The next step was the analysis and interpretation of results. Conclusively, the review and synthesis of the knowledge were presented.[10]

The PICO strategy (Patient, Intervention, Control, Outcome) was used for searching the articles. This strategy enables the process of finding appropriate answers to questions arising from the practice. The components are described as follows: P - Patients with dry skin;

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I - Assessment methods and care actions taken during the prevention and treatment of skin; C - Benefits of existing treatments and/or no treatment; O - Prevention of lesions or improvements in the condition of dryness. The Evidence-Based Practice (EBP) indicates that the clinical problems arising during the process of delivering care, teaching or researching should be understood and then organized using this strategy.[11]

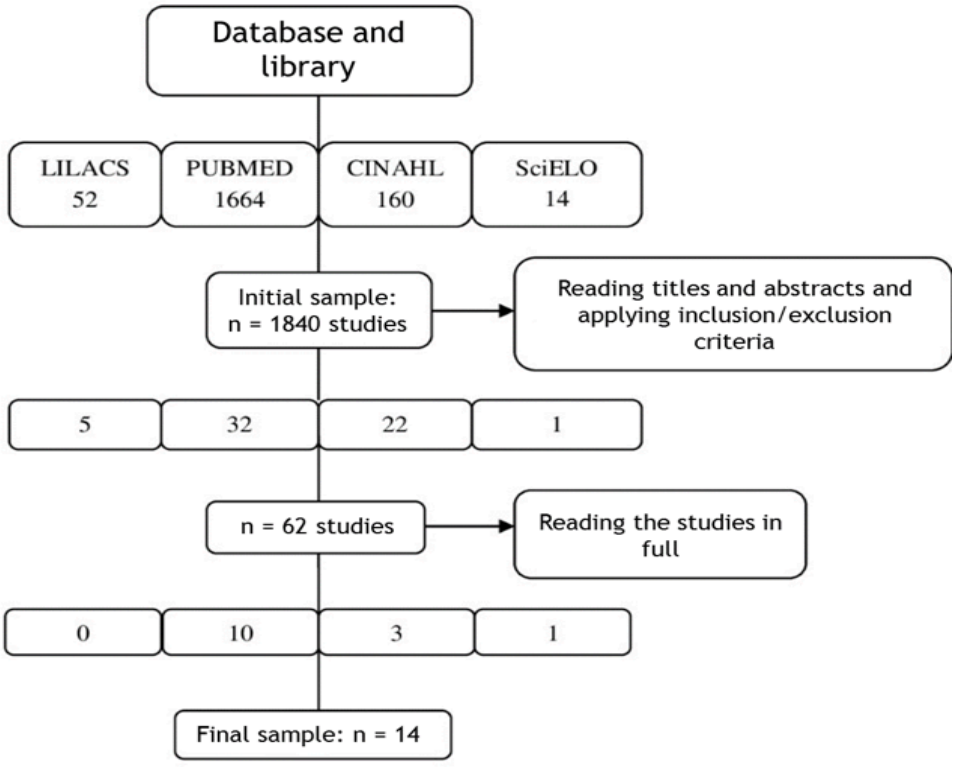
To select the articles, the *Coordenação de Aperfeiçoamento de Pessoal de Ensino Superior* (*CAPES*) [Coordination for the Improvement of Higher Education Personnel] portal was used. The following databases and libraries were used: *Literatura Latino-americana em Ciências da Saúde* (*LILACS*) [Latin American and Caribbean Health Sciences Literature], United States National Library of Medicine (PUBMED), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scientific Eletronic Libray Online (SciELO).

The search for articles was conducted from August to December 2017 using the following keywords: "*Pele seca*", "*Idoso*", "*Enfermagem*", "*Cuidados* de *enfermagem*", "*Prevenção*", "*Pele*", "*Hidratação*", "Dry skin", "Elderly", "Nursing", "Nursing care", "Prevention", "Skin", "Hydration", These keywords were combined through the Boolean operator *AND*.

It should be noted that the following inclusion criteria were adopted: articles in Portuguese, English, and Spanish that answered the guiding question of the study, available in full and published between 2007 and 2017. The excluded criteria were theses, dissertations, monographs, undergraduate theses, case reports, experience reports, manuals, reviews, previous notes, editorials, letters to the editor and duplicate publications. Six reviewers, two for each source, searched and selected the articles to give more methodological rigor during the process.

For the analysis and subsequent synthesis of the articles, a form having the following items was used: titles of the articles, journal, database/library, type of study/level of evidence, country, year of publication and main results. From the total of 1840 studies initially found, 14 articles were selected to compose the final sample as shown in Figure 1. After reading the titles and abstracts, the inclusion and exclusion criteria were applied before proceeding to read the other sections.

Figure 1. - Flowchart showing the process of selecting the articles analyzed in this integrative review.



The selected articles were classified according to their level of evidence. A seven-level classification system was employed, which is described as follows: Level I - evidence derived from systematic reviews on or meta-analysis of relevant clinical trials; Level II - evidence derived from at least one well-designed, randomized, controlled clinical trial; Level III - well-designed, non-randomized controlled trials; Level IV - well-designed cohort and case-control trials; Level V - systematic review of descriptive and qualitative studies; Level VI - evidence derived from a single descriptive or qualitative trial; and Level VII - opinion of authorities or expert committee report.[12]

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RESULTS AND DISCUSSION

Considering the 1,840 studies found during the search, only 14 composed the corpus of analysis. It is important to note that of the 1840 studies identified, 1776 (96.5%) did not answer the guiding question nor implement the PICO strategy; 28 (1.5%) were not available in full; 26 (1.4%) were duplicates and 12 (0.6%) were not in Portuguese, English or Spanish.

Concerning the databases and virtual library, there was a predominance of studies from PUBMED (71.5%), followed by CINAHL (21.4%) and SciELO (7.1%). Regarding the journal, the *International Journal of Nursing Studies* had a greater number of publications (14.2%), followed by the other journals having one study each. It should be noted that of the 14 studies only one (7.1%) was published in a Brazilian journal, one (7.1%) was addressed geriatric nursing and five (35.5%) were not specific to the nursing area.

The majority of the studies were cross-sectional/ observational ones with level IV evidence (57.2%), followed by randomized clinical trials with level II evidence (28.6%). There was a non-randomized clinical trial with level III evidence (7.1%), and a systematic review of correlation/observation studies with level V evidence (7.1%). This profile points to the need for systematic reviews or meta-analysis of these clinical trials to increase the evidence level. Despite the period without scientific production (from 2008 to 2010), it was possible to observe that from 2012 onward there was a continuous frequency of publications until the year 2017 with a prevalence of two to three studies/year as can be observed in **Table 1**.

Table 1. - Scientific production on the subject.

Title	Journal	Type of study/ level of evidence	Country/year of publication	Main results
Effect of oral hydration on skin microcirculation in healthy young and midlife and older adults	Wound repair regen.	Non-randomized clinical trial/ III	United States of America/ 2007	Non-invasive skin microcirculation measures may be sensitive enough to detect microvascular changes in the skin in response to additional oral hydration among the elderly.
Dry skin of the feet: a comparative study on the effectiveness of two moisturizers	Br. j. community nurs.	Cross-sectional and observational study/IV	England/ 2011	The combination of moisturizing, emollient and occlusive ingredients in moisturizers would be most appropriate due to their greater moisturizing effect on feet showing dry skin.
Skin care practice in German nursing homes: a German-wide cross-sectional study	J. Dtsch. Dermatol. Ges.	Cross-sectional and observational study/IV	Germany/ 2012	About 90% of people in need of nursing care in Germany perform skin cleansing and use skincare products every day.
Foot health and self-care activities of older people in-home care	J. clin. nurs.	Observational study/ IV	England/ 2012	They indicate that the elderly need help with foot care and professionals now play a relevant role in promoting self-care.
The epidemiology of skin care provided by nurses at home: a multicentre prevalence study	J. adv. nurs.	Observational study with a quantitative approach/IV	England/ 2014	There is a variety of products for this care, but labels provide little information about the components or guidance on how they should be used.
Effect of Intensive Nursing Education on the Prevention of Diabetic Foot Ulceration Among Patients with High-Risk Diabetic Foot: A Follow-Up Analysis	Diabetes Technol Ther.	Observational study/ IV	United States of America/ 2014	Nursing education regarding the prevention of diabetic foot complications pointed to statistically significant improvements, which helps to prevent dryness/ulceration of the diabetic foot and decrease the amputation rate.
Reflexologia podal no comprometimento dos pés de pessoas com diabetes mellitus tipo 2: ensaio randomizado	Rev. Latino-Am. Enfermagem	Randomized clinical trial/ II	Brazil/ 2015	Foot reflexology resulted in improvements in hair growth, degree of elasticity, hydration, perspiration, texture and skin integrity/desquamation.
Skin hydration in nursing home residents using disposable bed baths	Geriatr. nurs.	Randomized clinical trial/ II	United States of America/ 2015	Skin hydration was measured before and after the application of disposable washing gloves. The use of disposable washing gloves does not increase the risk of dry skin.

Title	Journal	Type of study/ level of evidence	Country/year of publication	Main results
Dry skin in nursing care receivers: A multi-centre cross-sectional prevalence study in hospitals and nursing homes	Int. J. Nurs. Stud.	Cross-sectional and observational study/IV	England/ 2016	Care for dry skin is particularly recommended for hospitalized patients and residents of asylums who are affected by itching or oncologic diseases.
Exploring the prevalence of skin tears and skin properties related to skin tears in elderly patients at a long-term medical facility in Japan	Int. Wound J.	Cross-sectional and observational study/IV	England/ 2016	They indicate that the risk factors for the prevalence of skin ruptures are not only chronological aging involving the effects of senescence but also photoaging.
The Skin Safety Model: Reconceptualizing Skin Vulnerability in Older Patients	J. nurs. scholarsh.	Systematic review of correlation/ observational studies/V	United States of America/ 2016	It offers a unified tool that covers skin vulnerability conditions as well as iatrogenic skin lesions. It allows recognizing the complex interaction of factors related to the patient and the external system.
The effectiveness of using a bath oil to reduce signs of dry skin: A randomized controlled pragmatic study	Int. J. Nurs. Stud.	Randomized clinical trial/ II	England/ 2017	After the application of soybean-based oil during bathing, the skin barrier condition was improved, thus reducing the transepidermal water loss.
Skin hydration and lifestyle-related factors in community-dwelling older people	Arch. gerontol. geriatr.	Cross-sectional and observational study/IV	Netherlands/ 2017	The importance of the observation-based evaluation with the aid of electronic equipment was noted, and hospitalization and lifestyle factors are directly related to hydration.
Novel TRPM8 agonist cooling compound against chronic itch: results from a randomized, double-blind, controlled, pilot study in dry skin	J. Eur. Acad. Dermatol. Venereol.	Randomized clinical trial/ II	Netherlands/ 2017	The use of a lotion containing potential melastatin receptors subtype 8 significantly decreased itching. There was significant cooling and improvement in the quality of life.

In regard to the studies' origin countries, England was the most representative (43%), followed by the United States (28.6%), the Netherlands (14.2%), Brazil (7.1%), and Germany (7.1%). Hence, it is perceived that developed countries viewed the care for the elderly as a priority.

From the analysis of the results, it was possible to determine three categories: *"Oral and topical hydration for the care for the elderly with dry skin"*; *"Using instruments and providing care for the feet showing dry skin"*; and *"Hygiene measures and the process of selecting/indicating products"*.

Oral and topical hydration for the care of the elderly with dry skin

Nurses are constantly interacting with clients/patients and their essential function is to provide preventive care, identification, follow-up and treatment concerning skin conditions. Dry skin or senile xerosis is a common condition associated with chronic diseases such as diabetes. Some seasons and low humidity worsen this condition.[13,14]

Thus, greater attention should be paid to local risk factors so that skin lesions could be prevented among the elderly. Epidermis and dermis structural changes, chronological aging and its systemic implications, and aspects related to photoaging are examples of such factors.[15]

The elderly present hypoperfusion when submitted to low oral hydration conditions. Adequate hydration is essential for cellular function, enzymatic activity, DNA formation, wound healing and maintenance of skin integrity. The volume of liquid necessary to maintain adequate hydration is not yet well known, but a volume between 2000 and 3000 ml is indicated.[16]

Concerning the topical hydration, moisturizers are classified according to the action of their components: occlusive, humectants, emollients or protein repairers. Occlusive moisturizers delay the evaporation and loss of epidermal water through the formation of a hydrophobic film. Humectants retain water in the corneal layer either by attracting it from the dermis or in environments with atmospheric humidity above 70%. Emollients, on the other hand, are rich in substances capable of filling the intercorneocytic spaces with water. Finally, protein repairers help to repair damaged dermal protein structures or stimulate their production.[4]

A study compared the use of two moisturizers among women with dry skin on their feet. One of them was a liquid and the other a cream. They concluded that there is a significant difference in the use of the two types of moisturizers. However, the moisturizer in the cream form obtained better results when compared to aqueous one. Moreover, the recommended moisturizer should present combined characteristics of moisturizing, emollient and occlusive ingredients for treating extreme dryness.[17]

Using instruments and providing care for the feet showing dry skin

As technology and science advance, new instruments are developed. After being validated, they help with prevention and treatment. To maintain the integrity of the elderly's skin, a study developed a model to unify concepts aimed at skincare among the elderly. The Skin Safety Model (SSM) provides guidance on care to the elderly most vulnerable to injury. The model consists of four domains: potential factors for skin lesions, aggravating elements, potential skin lesions and potential consequences of skin lesions.[18]

According to a study that applied the Foot Health Assessment Instrument and the Foot Self-Care Activities Structured Interview, the elderly need support and nursing interventions to perform foot self-care activities and prevent complications. It was found that regular assessments, monitoring, and follow-up of changes, adequate documentation, and collaboration of the multidisciplinary team should be included.[19]

With regard to dry skin on feet, difficulties associated with self-care are observed both by physical conditions and by the lack of guidance on or understanding about the information received. According to a study carried out with 835 subjects in hospitals and long-stay institutions (LSIs) in Berlin, 48.8% of them had dry skin. The prevalence was higher in LSIs and the most affected areas were the feet and legs, followed by hands and arms.[20,21]

A model of health education focusing on foot self-care was implemented in China. A group of hospitalized patients with a previous history of dry feet participated in this study, which concluded that patients who did not manage diabetic feet allowed ulcers to appear. It also revealed that the incidence of ulceration among high-risk patients with diabetic feet was reduced because of the intensive health education activities promoted by nurses, which confirms that this is an essential intervention.[22]

Hygiene measures and the process of selecting/indicating products

The heterogeneity in the choice of cleaning products was reported in a study of 879 nursing home care customers/patients, highlighting the constant change in product use. Nonetheless, recommendations for the use of gloves during bathing, moisturizers, cleaning products as mild surfactants, and solutions with appropriate pH values are still considered to be relevant interventions.[23]

Skincare is often performed by the nursing team while delivering individual care, mainly hygiene care. Given the variety of products and the availability of more than 100 different brands, knowledge and responsibility are required for choosing and indicating products, as well as allowing these professionals to provide specific care to maintain and promote skin integrity.[24]

A randomized clinical trial evaluated the implications of bed bathing and conditions for the emergence or worsening of dry skin. Its findings showed that using soap with appropriate properties targeted to the elderly's skin and the need for hydration after the procedure should be priority conditions. However, the use of disposable gloves does not interfere with skin dryness or the environment temperature. It is worth noting that no significant scores regarding hydration were reported in the study.[25]

In relation to the temperature of the bathwater, values between 34 and 36 °C has been indicated since hot water dries the skin and removes its natural oiliness. There are few publications on the ideal temperature of the water used for bathing the elderly. Despite being subjective, the terms "hot", "tepid" and "cold" have been used instead.[26]

The regular use of bath oils also improves skin barrier conditions, which reduces transepidermal water loss although the use of bath oil alone may be insufficient to treat dry skin. This result was achieved during a study carried out at the *Charité – Universitätsmedizin Berlin* in Germany, in which the participants of the intervention group were instructed to use an oil additive with 85% of soybean every day during a bath. It was recommended that the bath should last 20 minutes at a maximum temperature of 36 °C and the skin should be lightly dried with a soft towel.[27]

Another common symptom associated with dry skin among the elderly is chronic itching, which is commonly relieved by using moisturizing products containing menthol. Nonetheless, menthol is less effective when the itching is severe, and its topical use can lead to irritation. In this sense, it is worth mentioning that a double-blind randomized study found that the use of a lotion containing potential melastatin receptors subtype 8, which is an ionic channel for modulating itching, significantly decreased itching. Additionally, there was a significant cooling consequently improving the patients' quality of life.[28]

CONCLUSIONS

With the increase in life expectancy and consequently the presence of chronic diseases, it is observed that there is a concern by nurses regarding the maintenance of skin integrity in the elderly. Dry skin or xerosis is a senile complication that has contributed to a worsened quality of life and increased rates of severe skin lesions.

Most studies presented relevant nursing interventions aimed at oral and skin hydration, self-care education, care for feet showing dry skin, and the use of products. In relation to studies with a higher level of evidence, it is possible to observe that the technical-scientific advances allow the use

of instruments and products increasingly suitable for the care of the elderly with dry skin.

The lack of a specific descriptor associated with dry skin was a limitation of this review. Furthermore, little research on the subject has been carried out, highlighting the need for new studies with a higher level of scientific evidence addressing preventive care and treatment of dry skin among this vulnerable population.

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