

Nursing care in the prevention of skin tears in the elderly: integrative review of the literature

Abstract

Introduction

Skin tears are considered injuries of traumatic etiology that can result from a variety of mechanical forces, such as shear or friction forces, blunt trauma, falls, improper handling, injury caused by equipment or removal of adherent dressings.

These are acute wounds that have a high probability of becoming complex chronic wounds. They cause pain, increase healthcare costs, reduce quality of life and are a source of stress for the person. They lengthen hospital stay and increase the risk of morbidities. Skin Tears are a growing problem, making it crucial to invest in this topic in order to promote their prevention and proper treatment.

Objective

To identify nursing care and strategies to prevent skin tears in the elderly.

Methods

A bibliographic survey of publications was carried out in the EBSCOhost search engine, which incorporates the CINAHL Complete, MEDLINE Complete and Cochrane Database of Systematic Reviews databases and in the PubMed database, carried out in June 2022. 26 records were returned, five meeting the inclusion criteria. The included studies (n=5) were carried out between 2012 and 2022.

Results

In the sample of articles, it was possible to identify the benefits of twice-daily application of topical products, moisturizing creams and emollients, and the relevance of oral administration for 8 weeks of an oral nutritional supplement in the hydration of the stratum corneum and in the elasticity of the skin, as well as the importance of primary prevention and the promotion of health education in elderly skin care.

Conclusion

Preventive care to avoid skin tears in the elderly focuses on the daily topical application of moisturizing creams and emollients, nutrition (administration of oral nutritional supplements with 10g of collagen peptides) and adequate hydration; to prevent cutaneous traumas by providing a safe environment with adequate devices, and through the promotion of health education.

Keywords

Skin Tears; Prevention; Effectivity; Elderly; Health Care; Nursing Care.

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Introduction

Ageing is characterized by natural, dynamic and progressive decline in which morphological, physiological, biochemical and psychological modifications occur, thus increasing the vulnerability of the elderly and causing a greater occurrence of pathological processes.

With advancing age, according to Papaléo,⁶ the skin tends to become thinner and more flaccid. There is a decrease in the thickness of the epidermis-dermis, in the size of the keratinocytes, in cell proliferation in the stratum basale and in structural and architectural alterations of the elastic fibers that make the collagen system vulnerable to mechanical forces. There is also a strong compromise of the collagen metabolism, and consequently, the skin becomes less elastic and thinner.

For Oriá *et al.*,⁷ the barrier function of the skin is also affected. There is a decrease in the hydration of the stratum corneum, a compromise of the sebaceous and sweat glands and a decrease in the vascular bed along with the fragility of the blood vessels. According to LeBlanc *et al.*,⁸ these physiological changes that occur with ageing lead to an increase in the occurrence of skin tears and, consequently, to the compromise of the human body's homeostasis.

Skin tears are considered injuries of traumatic etiology that can result from a variety of mechanical forces, such as shear or friction forces, blunt trauma, falls, improper handling, injury caused by equipment or removal of adherent dressings. These may occur in any anatomical region, but are more frequent in the extremities, particularly in the upper limbs, where they occur 70 to 80% in the hands and forearms.^{5,9,10}

Skin tears are a problem with some prevalence in the elderly and with a negative impact both on their quality of life and on the increase in costs for the person and the health system. It is therefore essential to address this subject and analyze the scientific evidence, in national and international studies, about nursing care in prevention for the elderly.

Considering the different professional contexts of the reviewers, it was consensual that skin tears are increasingly

prevalent and transversal to distinct services, raising the need to deepen the knowledge and improve the quality of the nursing care provided, in order to prevent possible complications.



The starting question for this study was: "What are the nursing care practices in the prevention of skin tears in the elderly?", where the general objective is to assess the state of the art regarding the prevention of skin tears in the elderly. As a specific objective we aim to identify nursing care practices and strategies in the prevention of skin tears in the elderly. This integrative review is divided into four parts: the methodology, where a description of the research elaboration method and a presentation of the flowchart of the article selection process are carried out; the sample results organized by the name of the article, year, objective, sample, type of study, methodology and the main conclusions; the discussion of the main results of the review and the limitations of the study; the conclusion, which includes the general interpretation of the results, their relevance for clinical practice, implications for future research and the strengths and limitations of the review.

Methods

According to Soares *et al.*¹¹ a integrative literature review is developed with the purpose of gathering and synthesizing results from studies carried out using different methodologies to deepen the knowledge on the chosen subject.

Based on the starting question: "What are the nursing care practices in the prevention of skin tears in the elderly?", a search was conducted in the EBSCOhost search engine integrating the CINAHL Complete, MEDLINE Complete and Cochrane Database of Systematic Reviews databases and in PubMed, to identify the articles on the subject, using natural language words and terms indexed by the PEO elements described, applying the Boolean operators "OR" and "AND" and the use of truncations (see Table 1).

Table 1- OR and AND combination across the key concepts identified for the research strategy

P - Population	AND	E - Exposure	AND	O - Outcomes
Elderly over 65 years old		Skin Tears Prevention		Nursing Care
Elderly <u>OR</u> "old man" <u>OR</u> "aged" <u>OR</u> "frail elderly" <u>OR</u> "Old people" <u>OR</u> "65 over" <u>OR</u> "older people"		Prevent* <u>OR</u> Effectiv*  "Skin tears" <u>OR</u> "skin laceration"		"nursing care" <u>OR</u> 'nursing strategies" <u>OR</u> "nursing tasks" <u>OR</u> nursing procedures" <u>OR</u> 'nursing guidelines" <u>OR</u> "nursing involvement" <u>OR</u> "nursing activities" <u>OR</u> "Nurses's Role" <u>OR</u> 'Nursing" <u>OR</u> "nursing interventions" <u>OR</u> "nursing instructions" <u>OR</u> 'nursing recommendations"  "Health care"

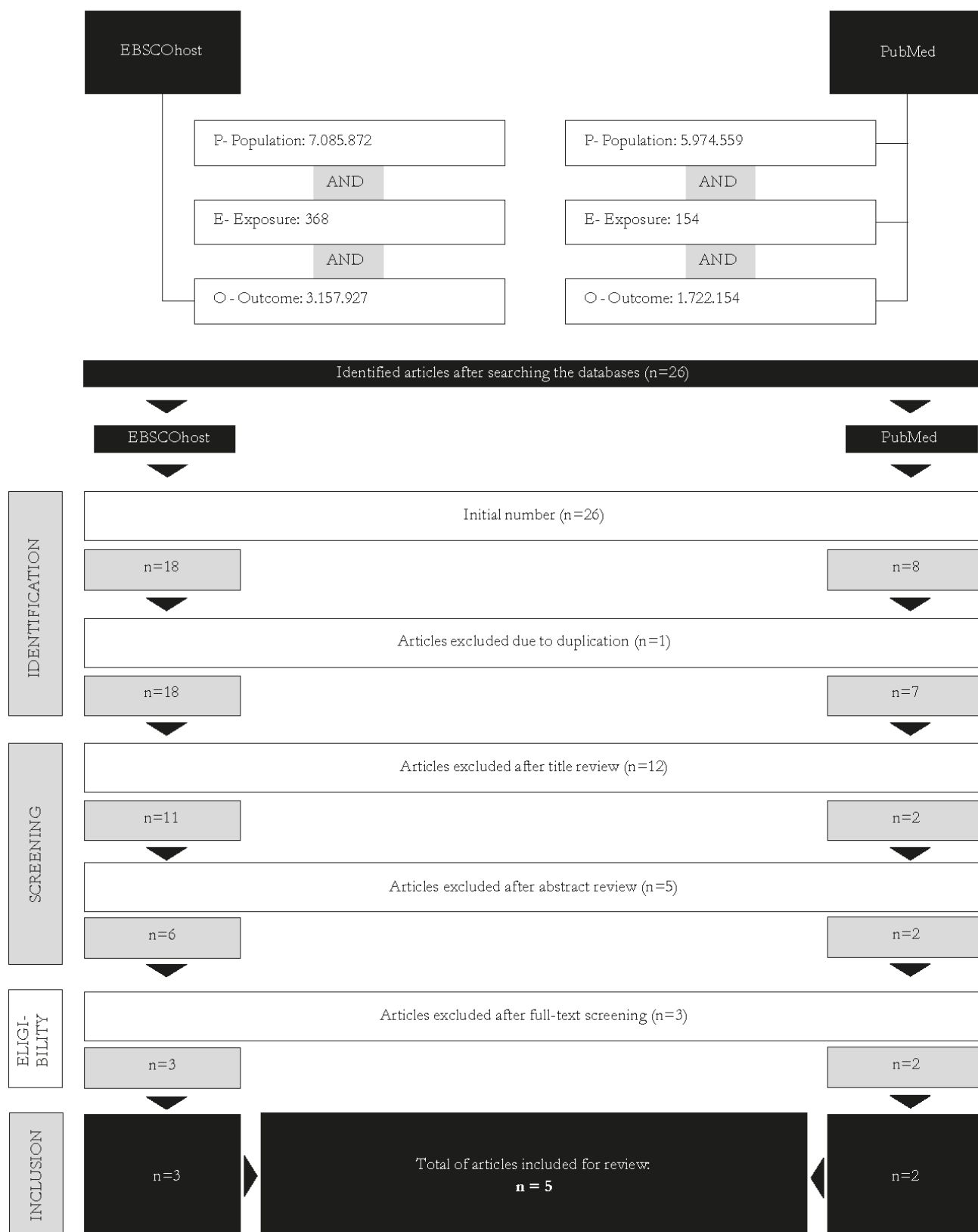
All articles addressing the research question were considered, in full text available for free online in the databases used, published between 2012 and 2022, written in Portuguese, English and Spanish, as these were the languages mastered by the reviewers.

The age range was defined as the research inclusion criterion: the elderly (over 65 years old) and without social context, that is, people in an outpatient basis or admitted to

hospitals, day centers, convalescent units or other health institutions were included.

From this search conducted in the aforementioned databases in June 2022, the sum of twenty-six articles was obtained, among which one was duplicate, twelve were excluded by reading the title, five rejected by reading the abstract and three eliminated by reading the full text. The final result was the inclusion of five articles for review, after their full reading, as explained in figure 1.

Figure 1 - Flowchart of the article selection process after applying the inclusion criteria.



The search steps on the retrieved articles were carried out independently by the three reviewers, to assess compliance with the eligibility criteria for the present review. After this first selection, the full texts (of potentially relevant evidence) were extracted and assessed thoroughly in order to detect any deviations from the inclusion criteria.

For an article to progress to the full reading stage, it was necessary for at least two of the three reviewers to consider it eligible.

Results

The sample results are presented in the table below, organized by article name, year, objective, sample, type of study, methodology and the main conclusions regarding the final articles that were included in this integrative review.

Table 2 – Results of the final articles included in the integrative review

Article name	Objective	Sample	Type of Study	Methodology	Main conclusions
The effectiveness of a twice-daily skin-moisturizing regimen for reducing the incidence of skin tears; Carville K, <i>et al.</i> , 2014 ⁴	To assess the effectiveness of a standardized twice-daily hydration regimen in preventing skin tears in hospitalized patients in health facilities.	980 hospitalized patients in 14 Western Australian health facilities	Cluster randomized controlled clinical trial	Elderly care facilities were divided into 7 pairs, defined by number of beds and provision of high or low clinical care. One healthcare unit from each matched pair was randomized to the intervention group and the other to the control group. In the intervention group, the elderly received a twice-daily application of a standardized pH-neutral, perfume-free moisturizer on the extremities of the body, applied in a gentle, downwards direction. The elderly in the control healthcare units did not receive any standardized skin hydration regimen. <i>SPSS, version 19</i> application software was used to analyze the data collected over the course of 6 months.	Applying moisturizer twice-daily, reduced the incidence of skin tears in almost 50% of the users living in the health facilities. The highest percentage of skin tears on the extremities of the lower limbs was observed in the facilities with low clinical care. The most dependent elderly showed skin tears at arm level. The main contributing factor to skin tears in both groups was age-related skin fragility.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Skin tear prevention in elderly patients using twice-daily moisturizer; Finch K, et al. 2018¹²</p>	<p>To test the efficacy of a twice-daily application of moisturizer to the extremities of hospitalized elderly patients over a 12-month period (January to December 2013).</p>	<p>Included 762 eligible patients in the intervention group and 415 users in the historical control group (over 65 years old)</p>	<p style="text-align: center;">Prospective intervention study</p> <p>The prospective intervention study was conducted and compared with the results of historical controls (study conducted from July to December 2011, involving 415 patients, with a duration of 6 months). Patients were admitted to a Brisbane private hospital (45 beds in the rehabilitation ward and 30 in the <i>acute/subacute ward</i>). The following exclusion criteria were applied: patients who did not sign the consent form; those who had a day admission to the rehabilitation ward; those deemed unsuitable by medical officer; and those who could not apply the cream due to medical conditions. Inclusion criteria: patient's age; gender; inpatient ward; pressure ulcer risk assessment (using the <i>Waterlow Scale</i>); patient's risk of falls; cognitive status; skin characteristics such as dry or discolored skin; number of skin lesions; day and time of skin tear occurrence; anatomical location of skin lesions; the STAR <i>Skin Tear Classification</i>; factors that may have contributed to a skin lesion (assessed by a team member after discussion with the patient) and the location of the ward where the skin lesion happened. Patients in the intervention group were subject to a twice-daily application of a pH-neutral, non-perfumed moisturizer on their arms and legs, while users in the control group were not subject to any cream application. Monthly incidence rates of skin lesions were calculated as number of skin lesions/days of occupied beds and the statistics were carried out with IBM SPSS for Windows, Version 2.3.</p>	<p>Applying a pH-neutral, non-perfumed moisturizing cream on a twice-daily basis reduced skin tears by almost 50%. This frequency helps maintain skin hydration and supports and repairs the skin's barrier function, regardless of the healthcare facility. It produces evidence to support the benefits of applying twice-daily moisturizing cream to the extremities of hospitalized elderly patients when the goal is to reduce the incidence of skin tears. This relatively low-cost intervention has the potential to reduce healthcare costs and improve healthcare outcomes.</p>
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<p>Effect of an Oral Nutrition Supplement Containing Collagen Peptides on Stratum Corneum Hydration and Skin Elasticity in Hospitalized Older Adults: A Multicenter Open-label Randomized Controlled Study; Nomoto T, Iizaka S, 2020¹³</p>	<p>To investigate the effect of the oral administration of a nutritional supplement containing collagen peptides on stratum corneum hydration.</p>	<p>39 inpatients 65 years or older</p>	<p>Open-label randomized controlled study</p>	<p>A multicenter, open-label, randomized controlled study was conducted to examine the effect of 8-week oral administration of an oral nutrition supplement, containing 10g of collagen peptides on stratum corneum hydration and skin elasticity in 39 elderly inpatients in convalescent rehabilitation wards. Comparison with residents in the control group. IBM <i>Statistical Package for the Social Sciences (SPSS)</i> version 19 was used to analyze the data.</p>	<p>Oral nutritional supplements containing collagen peptides can reduce skin vulnerability in the elderly and thus helping to prevent problems such as skin tears. After 8 weeks, stratum corneum hydration and skin elasticity were significantly higher in the intervention group that consumed oral nutritional supplements than in the control group that did not. This indicates that oral nutritional supplements containing collagen peptides can reduce the vulnerability of the skin of the elderly, helping to prevent problems such as skin tears. The mechanisms of such improvements are unknown, but the intake of collagen peptides contained in oral nutritional supplements may stimulate the growth of skin fibroblasts and the synthesis of hyaluronic acid.</p>
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Skin Tear in the Elderly; Spin M, e <i>et al.</i> ; 2021 ¹⁴	To identify, in the scientific literature, the knowledge produced about skin tears in the elderly.	Eight articles were selected, grouped into qualitative and quantitative categories, and categorized into themes, according to the similarity of the conclusions of the analyzed studies.	Integrative literature review	<p>Research was carried out on the platforms/databases <i>National Library of Medicine, Biomedical Answers Virtual Health Library</i>, with descriptors and the Boolean operators "<i>and</i>" and "<i>or</i>" between the years 2014 and 2019, using the following inclusion criteria: full articles made available free of charge and in full in Portuguese, English and/or Spanish. The research question was defined based on the PICO strategy.</p>	<p>Patients who presented malnutrition, hydration and low levels of serum albumin, were more prone to the appearance of skin tears. Activities performed during daily care can halve the incidence of skin tears, (the use of topical skin products such as hypoallergenic moisturizers based on lactic acid or urea twice-daily).</p> <p>For bathing, the use of soaps can affect the physiological characteristics of the skin and make it prone to the appearance of tears. The use of alkaline, antibacterial, or perfumed soaps can alter the skin's microbiome, so it is recommended to replace them with pH-neutral soaps, to use lukewarm water and to reduce the duration and frequency of the bath (bathing every two days is recommended).</p> <p>For the prevention of skin tears in the elderly emerged the following pillars of care:</p> <ul style="list-style-type: none"> • maintaining organic and tissue homeostasis with a focus on proper nutrition and hydration; • avoiding trauma to fragile skin, providing a safe environment with suitable devices; • systematization of health care and education for elderly skin care. • prevention mechanisms that encompass primary prevention through a unique care plan and healthcare education activities, focused on risk factors and vulnerabilities, minimizing damage and complications.
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Preventing skin tears among older adults in the community; Palmer SJ, 2021 ¹⁵	Preventing skin tears among the elderly in the community - guidance from 2018 from Wounds UK and Wounds International.	Not applicable	Expert opinion	Not applicable	<p>The prevention of skin tears should focus on the risk factors for the person with skin tears.</p> <p>Emollient therapy promotes general skin health and twice-daily application reduces the incidence of skin tears by 50%.</p> <p>The bath should be carried out with emollient and pH-balanced products when necessary. Frequency of bathing should be minimized. The water temperature should not be too hot, so as not to damage the epidermis, and care should be taken to dry the patient's skin (not rub), with the use of soft cloths and towels that are not abrasive on the skin.</p> <p>The skin tear prevention regimen should also involve holistic elements that consider the patient's general health, adequate nutrition and hydration, and polypharmacy.</p> <p>Educating the patient about preventive measures and general skin health can be beneficial, so that they can monitor their own skin for changes. Patients can also be encouraged to be aware of potential risks and attentive to their environment, therefore avoiding self-injury to fragile skin.</p> <p>A self-care checklist can be provided to patients who are able to comprehend and use it, so that they can monitor their own skin health and wellbeing.</p> <p>The risk of trauma can be mitigated with a few considerations: avoid friction and shearing, and perform good manual handling techniques, resorting to equipment when necessary. Equipment with sharp and moving surfaces can be padded to provide a safe environment, as well as proper and unobstructed lighting.</p> <p>Education and awareness are vital, both for the patient and for the health professional, to minimize the risk of skin tears.</p>
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Discussion

The discussion of results aims to provide the most relevant, current and credible information obtained by reading the entire sample, in order to answer our starting question: “What are the nursing care practices in the prevention of skin tears in the elderly?”

The sample consists of articles from different types of studies, namely: prospective intervention; cluster-randomized controlled clinical trial; multicenter, open-label and randomized controlled study; integrative literature review; and expert opinion article.

Of the final studies: two assessed the benefits of applying topical products, moisturizing and emollient creams; another about the effect of oral administration of a nutritional supplement for 8 weeks on stratum corneum hydration and skin elasticity; the integrative review identified in scientific literature the knowledge produced on the prevention of skin tears in the elderly; and finally, an expert opinion article addressed the prevention of skin tears among the elderly in the community.

Studies that have evaluated the benefits of using topical preparations show that the incidence of skin tears in the elderly has decreased dramatically, regardless of the place of hospitalization.^{4,12} It is important to emphasize that the studies applied the topical preparations to the upper and lower limbs, since skin tears are more likely to occur at these anatomical sites.

The study by Finch *et al.*¹² showed that applying moisturizer twice-daily in a sample of 762 users reduced skin tears by almost 50%, highlighting the benefits associated with applying it regardless of the healthcare setting.

Carville *et al.*⁴ found that in a sample of 980 elderly people in 14 residential facilities in Western Australia, over a six-month period, a gentle, downwards application on the upper and lower limbs twice-daily of a standardized, pH-neutral, perfume-free moisturizer reduced the incidence of skin tears by almost 50% in the elderly. The highest percentage of skin tears on the extremities of the lower limbs was observed in the facilities with low clinical care. The most dependent elderly showed a higher percentage of skin tears at arm level. The use of topical skin products, such as hypoallergenic moisturizers based on lactic acid or urea, twice-daily can

halve the incidence of skin lesions, and the use of alkaline, antibacterial or perfumed soaps can alter skin's microbiome, so it is recommended to replace them with pH-neutral soaps, to use of lukewarm water and to reduce the duration and frequency of the bath, (bathing every two days is recommended), advocated by Spin *et al.*¹⁴

This conclusion is also reached in Palmer's¹⁵ article, stating that emollient therapy promotes general skin health and twice-daily application reduces the incidence of skin tears by 50%. The frequency of bathing should be minimized and only performed when necessary, with the use of pH balanced emollient products. The water temperature should not be too hot, so as not to damage the epidermis, and care should be taken to dry the skin of the patient (not rub), with the use of soft cloths and towels that are not abrasive on the skin.

According to Palmer,¹⁵ the prevention of skin tears should involve holistic elements that consider the patient's general health, proper nutrition and hydration.

Advising the patient about skin tears and preventive measures can be beneficial so that patients are able to monitor changes in their own skin and avoid self-injury to fragile skin.

The risk of potential trauma can be mitigated with a few considerations: avoiding friction and shearing, good manual handling techniques resorting to devices such as hoists and transfers; equipment and furniture should be padded; and ensuring a safe environment (for example, with proper and unobstructed lighting).

Nomoto & Iizaka's¹³ study, concludes that administering oral nutritional supplements containing collagen peptides for 8 weeks can reduce skin vulnerability among the elderly and thus prevent skin tears. The mechanisms of such improvements are unknown, but the intake of collagen peptides contained in oral nutritional supplements may stimulate the growth of skin fibroblasts and the synthesis of hyaluronic acid.

Spin *et al.*,¹⁴ state that patients who present malnutrition, dehydration, and low levels of serum albumin are more prone to the appearance of lesions, as the body mass index contributes to the premature ageing of the skin.

Therefore, and according to Spin *et al.*,¹⁴ for the prevention of skin tears in the elderly emerged four pillars of care:

- maintaining organic and tissue homeostasis with a focus on proper nutrition and hydration;
- avoiding trauma to aging skin, providing a safe environment with suitable devices;
- systematization of health care and education for elderly skin care.

prevention mechanisms that encompass a unique care plan and healthcare education activities, focused on risk factors and vulnerabilities, minimizing damage and complications.

Education and awareness are vital, both for the patient and for the health professional, to minimize the risk of skin tears.

Conclusion

The development of this integrative literature review allowed us to obtain some answers to the initially proposed PEO question.

From the analysis of the articles, which were part of the sample, we conclude that there is a relationship between the topical application of skin care products, such as moisturizing creams and emollients, and the reduction in the prevalence of developing skin tears, by about 50%.

Though the study had a small sample size, it showed that administering oral nutritional supplements with 10g collagen peptides can reduce skin vulnerability among the elderly and thus prevent skin tears.

Primary prevention and the promotion of healthcare education for elderly skin care play a critical role in preventing skin tears in this age group. The holistic view towards the person with skin tears, promotion of skin care, hygiene care management, a safe environment and a balanced diet are pivotal to the prevention of skin tears in the elderly regardless of whether they are in a home or institutional setting.

After the systematic literature review, the scarcity of studies to support nursing care in the prevention of skin tears in the elderly was evident.

Considering that skin tears are painful, affect the quality of life of the person with the injury and the caregivers, can be a source of infection and cause burdens for the person/family and the health system, further studies on this issue are essential in the future.

This study, for the health professionals who carried it out, was enriching in the sense that knowledge was obtained about the benefits applying of skin care products, such as moisturizing and emollient creams (mainly by following a twice-daily application), serving as a basis for the development of technical guidance in their respective health facilities.

As nurses, we have the responsibility to educate families and caregivers, as well as health operational technicians, on the prevention of skin tears. This study will serve as a basis for the development of future in-service training on the subject, targeting health professionals from the multidisciplinary team and/or informal caregivers.

With low-cost, easy to apply care, we can reduce the incidence of skin tears by about 50%, increase the quality of life of individuals, and reduce the burden of this type of tissue damage on the health system and patients/families.

Authors' contributions

ACCT: Elaboration of the article, from data collection, analysis and interpretation of data, writing of the work and revision of the article.

LMSCO: Elaboration of the article, from data collection, analysis and interpretation of data, writing of the work and revision of the article.

MIRVB: Elaboration of the article, from data collection, analysis and interpretation of data, writing of the work and revision of the article.

Conflicts of interests

No conflict of interest declared by the authors.

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