








## PREVALENCE AND INCIDENCE OF SKIN TEARS IN CRITICALLY ILL PATIENTS AND PATIENTS IN PALLIATIVE CARE

### PREVALÊNCIA E INCIDÊNCIA DE LESÃO POR FRICÇÃO EM PACIENTES CRÍTICOS E PACIENTES EM CUIDADOS PALIATIVOS.

### PREVALENCIA E INCIDENCIA DE LESIONES POR FRICCIÓN EN PACIENTES GRAVES Y EN CUIDADOS PALIATIVOS

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#### ABSTRACT

**Objective:** to determine the prevalence and incidence of skin tears in critically ill patients and patients hospitalized under palliative care. **Method:** this study, conducted in a palliative care unit and two intensive care units of a University Hospital in São Paulo, Brazil, examines prevalence and incidence. All admitted patients on the first day of collection were included in the prevalence study. The incidence survey included all patients admitted in June 2021 without skin tears on admission, and a stay of at least two days in the study. The prevalence was determined on the first day of the survey, and the cumulative incidence was calculated over 30 consecutive days. The chi-square and Mann-Whitney tests (CI = 95%) were used for the analyses. **Results:** 119 patients were evaluated. In the intensive care units, the prevalence of skin tears was 11.1%, and the incidence was 14.3%. In the palliative care unit, the prevalence and incidence of these injuries were 25.0% and 28.6%, respectively. There was a predominance of injuries with total loss of the skin flap (type 3), and the upper and lower limbs were the most affected sites. Critically ill patients with skin tears had lower Braden scores when compared to the other participants ( $p \leq 0.033$ ). **Conclusion:** the prevalence and incidence of skin tears were similar to those found in the literature, except for the incidence among participants in palliative care, which was higher.

**Keywords:** Wounds and Injuries; Pressure Ulcer; Impatients; Palliative Care; Critical Care; Prevalence; Incidence.

#### RESUMO

**Objetivo:** conhecer a prevalência e incidência da lesão por fricção em pacientes críticos e em pacientes hospitalizados em regime de cuidados paliativos. **Método:** estudo de prevalência e incidência realizado em uma unidade de cuidados paliativos e duas de terapia intensiva de um Hospital Universitário da cidade de São Paulo, Brasil. Foram incluídos no estudo de incidência todos os pacientes internados no dia da coleta. Na pesquisa de incidência, houve a inclusão de todos os internados em junho de 2021, sem lesões por fricção na admissão e com permanência de pelo menos dois dias no estudo. A prevalência foi determinada no primeiro dia da pesquisa, e a incidência acumulada foi realizada em 30 dias consecutivos. Para as análises, foram utilizados os testes de Qui-quadrado e Mann-Whitney (IC = 95%). **Resultados:** foram avaliados 119 pacientes. Nas unidades de terapia intensiva, a prevalência de lesão por fricção foi de 11,1%, e a incidência de 14,3%. Na unidade de cuidados paliativos, a prevalência e incidência destas lesões foram de 25,0% e 28,6%, respectivamente. Houve predomínio das lesões com perda total do retalho de pele (tipo 3) e os membros superiores e inferiores foram os locais mais afetados. Os pacientes críticos com lesão por fricção apresentaram escores de Braden mais baixos quando comparados aos demais participantes ( $p \leq 0,033$ ). **Conclusão:** as prevalências e incidência de lesão por fricção foram similares às encontradas na literatura, com exceção da incidência entre os participantes em cuidados paliativos, que se apresentou mais elevada.

**Palavras-chave:** Ferimentos e lesões; Úlcera por Pressão; Pacientes Internados; Cuidados Paliativos; Cuidados Críticos; Prevalência; Incidência.

#### RESUMEN

**Objetivo:** conocer la prevalencia e incidencia de la lesión por fricción en pacientes críticos y en pacientes hospitalizados bajo régimen de cuidados paliativos. **Método:** estudio de prevalencia e incidencia realizado en una unidad de cuidados paliativos y dos de terapia intensiva de un Hospital Universitario de la ciudad de São Paulo, Brasil. Se incluyeron en el estudio de incidencia todos los pacientes internados el día de la recolección. En la investigación de incidencia, se incluyeron todos los hospitalizados en junio de 2021, sin lesiones por fricción al momento de admisión y con una permanencia de al menos dos días en el estudio. La prevalencia se determinó el primer día de la investigación, y la incidencia acumulada se realizó durante 30 días consecutivos. Para los análisis, se utilizaron las pruebas de Chi-cuadrado y Mann-Whitney (IC = 95%). **Resultados:** se evaluaron 119 pacientes. En las unidades de terapia intensiva, la prevalencia de la lesión por fricción fue del 11,1% y la incidencia del 14,3%. En la unidad de cuidados paliativos, la prevalencia e incidencia de estas lesiones fueron del 25,0% y del 28,6%, respectivamente. Hubo predominio de las lesiones con pérdida total del colgajo de piel (tipo 3) y las extremidades superiores e inferiores fueron los lugares más afectados. Los pacientes críticos con lesión por fricción presentaron puntajes de Braden más bajos en comparación con los demás participantes ( $p \leq 0,033$ ). **Conclusión:** las prevalencias e incidencia de la lesión por fricción fueron similares a las encontradas en la literatura, a excepción de la incidencia entre los

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*participantes en cuidados paliativos, que se presentó más elevada.*

**Palabras clave:** Heridas y Lesiones; Úlcera por Presión; Pacientes Internos; Cuidados Críticos; Prevalencia; Incidencia.

## INTRODUCTION

Skin tear (ST) is a traumatic wound that affects people with fragile skin, such as older patients, with cognitive changes, psychomotor agitation, reduced mobility, and dependence for basic activities of daily living, among others<sup>(1,2)</sup>. Due to skin fragility, the layers of the skin separate easily, even after mild trauma<sup>(1)</sup>. The most frequent sites of these injuries are the upper limbs, lower limbs, and back, and they can develop in any region of the body<sup>(1,2)</sup>. Studies indicate that STIs are frequent in health services, with prevalence ranging from 2.2% to 20.8%<sup>(3,4)</sup> and incidence of 7.2% to 18.9%<sup>(4,5)</sup>.

Skin fragility can occur due to multiple factors and affects several populations, such as critically ill patients and those with chronic diseases<sup>(1,2)</sup>. Critically ill patients experience several situations that can alter skin functions, such as changes in perfusion, hypoxia, inflammation, generalized edema, multiple organ dysfunction, and use of polypharmacy, making the skin more fragile. Patients with chronic diseases, such as those with renal, hepatic, or cardiac alterations and those on chronic use of medications such as corticosteroids and immunosuppressants, are at greater risk of skin fragility, as these conditions alter the vigor of the skin<sup>(2,6,7)</sup>.

Individuals in the final stages of life are at an increased risk of developing ST due to changes in skin integrity that lead to increased fragility. When death approaches, the body prioritizes the perfusion of vital organs, leading to alterations in the skin associated with decreased blood flow and hypoxia. These changes can occur at the tissue, cellular, or molecular level, diminishing the skin's ability to tolerate adverse conditions and making it more susceptible to the formation of lesions<sup>(3,7)</sup>.

The authors propose that, due to their relative simplicity, ST are often overlooked by healthcare professionals. Nevertheless, ST are painful conditions that can lead to additional costs for institutions and carry a risk of infection if not managed appropriately<sup>(1,4,8)</sup>. The nursing team has greater access to the skin of patients experiencing skin fragility compared to other professionals, allowing them to play a crucial role in monitoring ST and other skin injuries. They can also implement preventive strategies tailored to the specific profiles of patients. These considerations prompted the conduct of this study, which aimed to determine the prevalence and incidence of skin

tear injuries among critically ill patients and those receiving palliative care in hospitals, as well as to compare the characteristics of patients with and without

## METHOD

This is a cross-sectional and cohort epidemiological study performed at a university hospital in São Paulo, São Paulo, Brazil. The research followed the ethical precepts of Resolution 466/12 of the National Health Council and the Research Ethics Committee (CEP - Comitê de Ética em Pesquisa) of the Federal University of São Paulo (CAEE 51107221.1.0000.5505) approved it under opinion number 5,059,495. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines were used to construct and write this study.

The research was conducted in two intensive care units (ICU) and one palliative care unit (PCU) with eight, ten, and twelve beds, respectively, totaling 30 beds. The sample of the prevalence study consisted of patients admitted on June 1st, 2021, aged over 18 years, excluding those in urgent and emergency care, which prevented the researchers from approaching them. For the incidence study, all patients admitted in June aged over 18 years without STIs at the time of admission were included. Patients with only one skin assessment during this period due to death, transfers, or other reasons were excluded, making it impossible to compare the skin condition before and after their stay in the unit. Patients from the prevalence study without ST who remained hospitalized also participated in the incidence study. There were no sample losses during the study.

Researchers were aware that there would be a significant number of patients unable to sign the Informed Consent Form and without family members or guardians who could do so, which might not accurately reflect the prevalence and incidence of STIs in the studied sectors. The CEP was consulted, and the project was reformulated with the anonymization of the information, removing the names and hospital records of the participants from the data sheets before the processed information. This was performed by a professional who was not participating in the research. This condition was accepted by the CEP, as previously mentioned.

Patients underwent a complete skin assessment, performed by two or more researchers daily, until the development of ST or the end of the study period. The information was recorded on a specific form that included the following independent variables: age, reason for hospitalization, pre-existing diseases, level of consciousness, use

of sedatives, oxygen support, vasoactive drugs, route of diet administration, presence of prolonged fasting, continence and the risk score for developing pressure injury according to the Braden scale. The dependent variable was the presence or absence of ST. The locations and the classification of the ST were noted according to the guidelines of the International Skin Tear Advisory Panel. These guidelines classify injuries that maintain the skin flap after trauma as Type 1, injuries with partial loss of the skin flap as Type 2, and those with total loss of the skin flap as Type 3<sup>(1)</sup>. The data were stored in computerized spreadsheets using Microsoft Excel.

The prevalence was calculated by dividing the number of patients with ST by the total number of hospitalized patients multiplied by 100<sup>(9)</sup>. The incidence was assessed using the cumulative incidence, determined by the number of cases that developed STI during hospitalization divided by the number of patients at risk<sup>(9)</sup>. The IBM Statistical Package for Social Science – Statistics for Windows (SPSS) software, version 20.0, was used for data processing. For comparisons between the groups with and without STIs, the Chi-square and Mann-Whitney tests were performed, considering a 95% confidence interval (statistical significance level of 5%)

## RESULTS

In June 2021, a total of 119 patients were admitted to the study units, all of whom underwent evaluation by at least two researchers. There were no exclusions among participants in the prevalence survey. However, 42 individuals were excluded from the incidence study due to prior ST (n = 11) or because they had been in the sector for less than 24 hours (n = 31), which resulted in only one skin assessment.

Twenty-six patients participated in the prevalence study, 18 from the ICU and 8 from the PCU. In the ICU, the prevalence of ST was 11.1% and in the PCU was 25.0%. In the incidence study, 77 patients participated, 56 from the ICU and 21 from the PCU. The incidence of ST in these units was 14.3% and 28.6%, respectively. Table 1 describes the demographic and clinical characteristics of the participants in the prevalence study according to the hospitalization units.

In the ICUs, the prevalence survey identified three ST, all from Type 3 and located in the upper limbs. In the incidence study, the development of eight ST was observed: Type 1 (n = 1/12.5%), Type 2 (n = 2/25.0%), and Type 3 (n = 5/62.5%). The affected areas were lower limbs (n

= 4 / 50.0%), upper limbs (n = 2 / 25.0%), and dorsal region (n = 2 / 25.0%).

At the PCU, the prevalence survey found four ST, with occurrences of Type 3 (n = 3/75.0%) and Type 1 (n = 1/25.0%), located in the upper limbs (n = 2/50.0%), lower limbs (n = 1/25.0%) and dorsal region (n = 1/25.0%). During the incidence survey, six ST of Type 3 (n = 5/83.3%) and Type 2 (n = 1/16.7%) developed, with upper limbs (n = 4/66.7%) and lower limbs (n = 2/33.3%) as affected locations.

In the participants in the prevalence study, ICU patients with ST had lower Braden scores compared to patients without these injuries (p = 0.013), indicating a higher risk for pressure injuries. PCU patients with ST were older compared to those without ST (p = 0.023). According to the Chi-square and Mann-Whitney tests, there were no statistically significant differences between the groups with and without injuries for the other variables.

In the incidence survey, there were no statistically significant differences between the groups with and without ST, according to the Chi-square and Mann-Whitney tests, in the following variables: gender, age, reasons for hospitalization, comorbidities, changes in consciousness, use of sedation, oxygen support and vasoactive drugs, feeding route, presence of urinary incontinence, fecal incontinence and Braden scale scores in the ICU and PCU subgroups.

## DISCUSSION

Skin lesions raise several issues with negative repercussions for patients, health professionals, and institutions. Prevalence and incidence studies are of great importance for monitoring these lesions, in addition to providing data for the development of other studies, such as systematic reviews and economic studies<sup>(9)</sup>. The present study observed prevalence and incidence of ST similar to those found in health services, except for the incidence among patients receiving palliative care, which was higher.

Studies conducted in intensive care units showed prevalence rates of STs ranging from 11.7% to 28.7%<sup>(10,11)</sup> and incidence rates from 7.2% to 14.3%<sup>(5,12)</sup>. These results are similar to this study. Critically ill patients generally face situations that alter the skin's resistance to external damage, increasing the risk of developing these lesions, such as the use of drugs that affect peripheral perfusion, repeated episodes of fasting, hydroelectrolytic imbalance, and dependence on movement in bed, among others<sup>(2,7,13)</sup>.

Tabela 1 - Demographic and clinical characteristics of study participants in intensive care and palliative care units. São Paulo-SP, Brazil, 2021.

	Intensive care unit				Palliative care unit			
	Prevalence		Incidence		Prevalence		Incidence	
	No Injury	With Injury	No Injury	With Injury	No Injury	With Injury	No Injury	With Injury
Participants, n	16	2	48	8	6	2	15	6
Gender, n								
Male	6	2	24	4	3	1	4	3
Female	10	0	24	4	3	1	11	3
Age, mean±sd	61,2±10,7	43,0±15,5	56,9±16,7	55,1±15,5	59,3±16,6	86,0±9,9	57,7±15,5	69,0±23,4
<b>Reason for admission, n</b>								
Neurological disorder	1	1	10	2	1	0	4	3
Gastrointestinal problem	1	1	4	1	2	0	2	1
Respiratory disorder	3	0	3	0	1	1	4	1
Cardiac disorder	3	0	11	1	0	0	0	0
Kidney problem	1	0	8	3	0	0	3	0
Other	7	0	12	1	2	1	2	1
<b>Comorbidities, n</b>								
High blood pressure	10	0	30	5	3	2	4	3
Diabetes	5	0	18	2	3	2	4	2
Neuropathy	5	2	8	1	4	0	9	6
Heart disease	6	0	16	2	1	0	2	1
<b>Conscience, n</b>								
Preserved consciousness	13	2	35	5	6	0	12	6
Altered consciousness	3	0	13	3	0	2	3	0
<b>Sedation, n</b>								
No	12	2	37	6	6	2	15	6
Yes	4	0	11	2	0	0	0	0
<b>Oxygen support, n</b>								
No	5	1	24	3	3	1	9	4
Yes	11	1	24	5	3	1	6	2
<b>Vasoactive drug, n</b>								
No	14	2	37	6	6	2	15	6
Yes	2	0	11	2	0	0	0	0
<b>Nutrition, n</b>								
Oral	6	0	23	5	3	0	8	0
Nasoenteral tube	8	2	14	1	2	2	5	5
Prolonged fasting	2	0	11	2	1	0	2	1
<b>Continence, n</b>								
Total continence	6	0	20	2	1	0	4	1
Urinary incontinence	3	0	7	3	3	2	7	2
Fecal incontinence	9	2	26	6	5	2	11	5
<b>Braden, n</b>								
No risk	1	0	4	0	1	0	3	0

Continued...

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	Intensive care unit				Palliative care unit			
	Prevalence		Incidence		Prevalence		Incidence	
	No Injury	With Injury	No Injury	With Injury	No Injury	With Injury	No Injury	With Injury
Low risk	3	0	7	2	1	0	4	0
Moderate risk	3	1	13	3	2	2	2	3
High risk	9	1	20	3	2	0	4	2
Very high risk	0	0	4	0	0	0	2	1

A study investigating skin lesions in patients with terminal illnesses found a prevalence of ST of 9.9% among cancer patients and 25.8% among participants with other conditions<sup>(3)</sup>. In health institutions, the prevalence of STs in Long-Term Care Facilities for the Elderly (Instituições de Longa Permanência para Idosos - ILPI) varied between 3% to 20,8%<sup>(4,6,14-17)</sup>, while in hospital settings, it ranged from 4.1% to 13,3%<sup>(11,18-21)</sup>. Another study focused on terminal patients reported incidences of 6.5% and 14,3%<sup>(3)</sup>, in patients with and without cancer, respectively. In ILPIs, ST rates ranged from 3.8% to 27,2%<sup>(4,22,23)</sup>; and among hospitalized patients, the rate was 13,5%<sup>(24)</sup>. The findings from participants in palliative care in this research indicated higher prevalence rates compared to those in hospital studies; however, they were similar to the values noted in research involving frail patients, such as those residing in ILPIs.

Patients experiencing frailty often undergo changes in their skin, resulting in a diminished natural resistance, particularly as their clinical condition deteriorates or as other dependent systems begin to change<sup>(2,13)</sup>. In the final stages of life, the decline of all organs and systems commences, including the skin. Generally, the body prioritizes the perfusion of vital organs, which leads to alterations in the skin due to reduced blood flow and hypoxia, potentially affecting tissue or cellular levels<sup>(2,13)</sup>.

Participants in the prevalence investigation in palliative care had lower Braden scores than patients who did not develop these injuries, like other studies<sup>(3,22)</sup>. In addition, authors highlighted other risk factors for the development of STs, such as advanced age<sup>(3,19,25)</sup>, presence of comorbidities<sup>(3)</sup>, cognitive alterations<sup>(25)</sup>, mobility alterations<sup>(25)</sup>, use of mechanical ventilation<sup>(5)</sup>, and incontinence<sup>(5)</sup>.

Some limitations of this study were that it was conducted in a single center and over 30 days. However, it contributed to the knowledge of the frequencies of STs developed among critically ill patients and those in palliative care. Articles dealing with the prevalence and

incidence of STs are scarce, especially in Brazilian patients in palliative care. This research contributed to the knowledge of the prevalence and incidence of skin tear injuries in critically ill patients and those hospitalized in palliative care, which can be used to implement preventive actions and monitor these injuries.

## CONCLUSION

The prevalence and incidence of STs were similar to those found in the literature, except for the incidence among participants in palliative care, which was higher. In addition, patients with Braden scores at risk of developing STs were more likely to develop STs. This study highlights the need to implement preventive strategies and monitor the development of these injuries since this condition is painful and implies extra costs for institutions. These results point to the relevance of Nursing in monitoring these injuries, as well as in the implementation of preventive strategies based on the profile of patients, aiming at reducing extra costs with curative therapies.

## REFERÊNCIAS

1. LeBlanc K, Langemo D, Woo K, Campos HM, Santos V, Holloway S. Skin tears: prevention and management. *Br J Community Nurs* [Internet]. 2019 [cited 2024 Jan 01];24(Sup9):S12-8. Available from: [https://www.magonlineibrary.com/doi/abs/10.12968/bjcn.2019.24.Sup9.S12?rfr\\_dat=cr\\_pub+0pubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Aacrossref.org](https://www.magonlineibrary.com/doi/abs/10.12968/bjcn.2019.24.Sup9.S12?rfr_dat=cr_pub+0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Aacrossref.org)
2. ISTAP Recomendações de Melhores Práticas 2020. Recomendações de melhores práticas: estratégias holísticas para a promoção e manutenção da integridade da pele, recomendações de um grupo de trabalho especializado [Internet]. São Paulo: SOBEST, Painel Consultivo Internacional para Lesões por Fricção (ISTAP), London: Wounds International; 2020 [cited 2024 Jan 01]. Available from: <https://sobest.com.br/wp-content/uploads/2022/12/Recomendacoes-de-Melhores-Praticas-ISTEP-2020.pdf>
3. Maida V, Ennis M, Corban J. Wound outcomes in patients with advanced illness. *Int Wound J* [Internet]. 2012 [cited 2024 Jan 01]; 9(6):683-92. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7950891/>

4. LeBlanc K, Woo KY, VanDenKerkhof E, Woodbury MG. Skin tear prevalence and incidence in the long-term care population: a prospective study. *J Wound Care* [Internet]. 2020 [cited 2024 Jan 01];29(Sup7):S16-S22. Available from: [https://www.magonlineibrary.com/doi/abs/10.12968/jowc.2020.29.Sup7.S16?rfr\\_dat=cr\\_pub++0pubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org](https://www.magonlineibrary.com/doi/abs/10.12968/jowc.2020.29.Sup7.S16?rfr_dat=cr_pub++0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org)
5. Monteiro DS, Borges EL, Spira JAO, Garcia TF, Matos SS. Incidência de lesões de pele, risco e características clínicas de pacientes críticos. *Texto Contexto Enferm* [Internet]. 2021 [cited 2024 Jan 1];30:e20200125. Available from: <https://www.scielo.br/j/tce/a/4FWZdWfSgrFzZgXwX8QFJ8D/?format=pdf&lang=pt>
6. Van Tiggelen H, Van Damme N, Theys S, Vanheyste E, Verhaeghe S, LeBlanc K, et al. The prevalence and associated factors of skin tears in Belgian nursing homes: a cross-sectional observational study. *J Tissue Viability* [Internet]. 2019 [cited 2024 Jan 01];28(2):100-6. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S0965206X18301207?via%3Dihub>
7. Levine JM, Delmore B, Cox J. Skin failure: concept review and proposed model. *adv skin wound care* [Internet]. 2022 [cited 2024 Jan 01];35(3):139-48. Available from: [https://journals.lww.com/aswcjournal/fulltext/2022/03000/skin\\_failure\\_\\_concept\\_review\\_and\\_proposed\\_model.3.aspx](https://journals.lww.com/aswcjournal/fulltext/2022/03000/skin_failure__concept_review_and_proposed_model.3.aspx)
8. Baranoski S, LeBlanc K, Gloeckner M. Preventing, assessing, and managing skin tears: a clinical review. *Am J Nurs* [Internet]. 2016 [cited 2024 Jan 01];116(11):24-30. Available from: [https://journals.lww.com/ajnonline/abstract/2016/11000/ce\\_\\_preventing,\\_assessing,\\_and\\_managing\\_skin.25.aspx](https://journals.lww.com/ajnonline/abstract/2016/11000/ce__preventing,_assessing,_and_managing_skin.25.aspx)
9. Merchán-Hamann E, Tauil PL. Proposta de classificação dos diferentes tipos de estudos epidemiológicos descritivos. *Epidemiol Serv Saude* [Internet]. 2021 [cited 2024 Jan 01];30(1):e2018126. Available from: <https://www.scielo.br/j/ress/a/zTjbdDrwQD8d7vRDbnspzbxM/?format=pdf>
10. Vieira CPB, Ferreira PC, Araújo TME, Silva Junior FJG, Galiza FT, Rodrigues ASO. Prevalência de lesões por fricção e fatores associados em idosos em terapia intensiva. *Texto Contexto Enferm* [Internet]. 2020 [cited 2024 Jan 01];29:e20180515. Available from: <http://dx.doi.org/10.1590/1980-265X-TCE-2018-0515>
11. Kaçmaz HY, Karadağ A, Kahraman H, Döner A, Ödek Ö, Akin S. The prevalence and factors associated with skin tears in hospitalized older adults: A point prevalence study. *J Tissue Viability* [Internet]. 2022 [cited 2024 Jan 01];31(3):387-94. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S0965206X22000584?via%3Dihub>
12. Gao C, Yu C, Lin X, Wang H, Sheng Y. Incidence of and risk factors for medical adhesive-related skin injuries among patients: a cross-sectional study. *J Wound Ostomy Continence Nurs* [Internet]. 2020 [cited 2024 Jan 01];47(6):576-81. Available from: [https://journals.lww.com/jwoconline/abstract/2020/11000/incidence\\_of\\_and\\_risk\\_factors\\_for\\_medical.8.aspx](https://journals.lww.com/jwoconline/abstract/2020/11000/incidence_of_and_risk_factors_for_medical.8.aspx)
13. Devlin JW, Skrobik Y, Gélinas C, Needham DM, Slooter AJC, Pandharipande PP, et al. Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. *Crit Care Med* [Internet]. 2018 [cited 2024 Jan 01];46(9):e825-e873. Available from: [https://journals.lww.com/ccmjournal/fulltext/2018/09000/clinical\\_practice\\_guidelines\\_for\\_the\\_prevention.29.aspx](https://journals.lww.com/ccmjournal/fulltext/2018/09000/clinical_practice_guidelines_for_the_prevention.29.aspx)
14. Hawk J, Shannon M. Prevalence of skin tears in elderly patients: a retrospective chart review of incidence reports in 6 long-term care facilities. *Ostomy Wound Manage* [Internet]. 2018 [cited 2024 Jan 01];64(4):30-6. Available from: <https://www.hmpglobelearningnetwork.com/site/wmp/article/prevalence-skin-tears-elderly-patients-retrospective-chart-review-incidence-reports-6-long>
15. Woo K, LeBlanc K. Prevalence of skin tears among frail older adults living in Canadian long-term care facilities. *Int J Palliat Nurs* [Internet]. 2018 [cited 2024 Jan 01];24(6):288-94. Available from: [https://www.magonlineibrary.com/doi/abs/10.12968/ijpn.2018.24.6.288?rfr\\_dat=cr\\_pub++0pubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org](https://www.magonlineibrary.com/doi/abs/10.12968/ijpn.2018.24.6.288?rfr_dat=cr_pub++0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org)
16. Peres GRP, Silva CVB, Strazzieri-Pulido KC, Santos VLCCG. Skin tears in older adult residents of long-term care facilities: prevalence and associated factors. *J Wound Care* [Internet]. 2022 [cited 2024 Jan 01];31(6):468-78. Available from: [https://www.magonlineibrary.com/doi/abs/10.12968/jowc.2022.31.6.468?rfr\\_dat=cr\\_pub++0pubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org](https://www.magonlineibrary.com/doi/abs/10.12968/jowc.2022.31.6.468?rfr_dat=cr_pub++0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org)
17. Völzer B, Genedy-Kalyoncu M, Fastner A, Tomova-Simitchieva T, Neumann K, Sill J, et al. Prevalence and associations of xerosis cutis, incontinence-associated dermatitis, skin tears, pressure ulcers, and intertrigo in aged nursing home residents: A representative prevalence study. *Int J Nurs Stud* [Internet]. 2023 [cited 2024 Jan 01];141:104472. Available from: <https://www.sciencedirect.com/science/article/pii/S0020748923000378?via%3Dihub>
18. Souza LM, Teixeira GDS, Silva DMD, Ruiz LDS, Coppola IDS, Meirelles LCDS. Prevalence of skin tears in hospitalized adults and older adults. *Rev Esc Enferm USP* [Internet]. 2021 [cited 2024 Jan 01];16:55:e03683. Available from: <https://www.scielo.br/j/reusp/a/YTdtBhPWbP39ytkhS8RCp9F/>
19. Miles SJ, Fulbrook P, Williams DM. Skin tear prevalence in an Australian acute care hospital: a 10-year analysis. *Int Wound J* [Internet]. 2022 [cited 2024 Jan 01];19(6):1418-27. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9493203/>
20. Bandeira MA, Schmidt FMQ, Nogueira PC, Rosa T, Felizardo RM, Castro DLV, et al. The prevalence of skin tears and associated factors in hospitalised patients with cancer. *J Wound Care* [Internet]. 2022 [cited 2024 Jan 01];31(7):579-84. Available from: [https://www.magonlineibrary.com/doi/abs/10.12968/jowc.2022.31.7.579?rfr\\_dat=cr\\_pub++0pubmed&url\\_ver=Z39.88-2003&rfr\\_id=ori%3Arid%3Acrossref.org](https://www.magonlineibrary.com/doi/abs/10.12968/jowc.2022.31.7.579?rfr_dat=cr_pub++0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org)
21. Ott CLB, Brinton CD, Yogaparan T, Dayal T, Vecchio A, Berall A. Skin tear management: a multidisciplinary education project. *Adv Skin Wound Care* [Internet]. 2024 [cited 2024 Jan 01];37(1):48-55. Available from: [https://journals.lww.com/aswcjournal/abstract/2024/01000/skin\\_tear\\_management\\_\\_a\\_multidisciplinary.8.aspx](https://journals.lww.com/aswcjournal/abstract/2024/01000/skin_tear_management__a_multidisciplinary.8.aspx)
22. Sanada H, Nakagami G, Koyano Y, Iizaka S, Sugama J. Incidence of skin tears in the extremities among elderly patients at a long-term medical facility in Japan: a prospective cohort study. *Geriatr Gerontol Int* [Internet]. 2015 [cited 2024 Jan 1];15(8):1058-63. Available from: <https://onlinelibrary.wiley.com/doi/10.1111/ggi.12405>
23. Völzer B, Genedy-Kalyoncu M, Fastner A, Tomova-Simitchieva T, Neumann K, Hillmann K, et al. Enhancing skin health and safety in aged care (SKINCARE trial): A cluster-randomised pragmatic trial. *Int J Nurs Stud* [Internet]. 2024 [cited 2024 Jan 01];149:104627. Available from: <https://www.sciencedirect.com/science/article/pii/S002074892300192X>
24. Minematsu T, Dai M, Tamai N, Nakagami G, Urai T, Nakai A, et al. Risk scoring tool for forearm skin tears in Japanese older adults: A prospective cohort study. *J Tissue Viability* [Internet]. 2021 [cited 2024 Jan 01];30(2):155-60. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S0965206X21000280?via%3Dihub>
25. Strazzieri-Pulido KC, Peres GR, Campanili TC, Santos VLCCG. Incidence of skin tears and risk factors: a systematic literature review. *J Wound Ostomy Continence Nurs* [Internet]. 2017 [cited 2024 Jan 01];44(1):29-33. Available from: <https://journals.lww.com/jwoconline/abstract/2017/01000/i>