



The prevalence and associated factors of skin tears in Belgian nursing homes: A cross-sectional observational study



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ABSTRACT

Background: Although skin tears are among the most prevalent acute wounds in nursing homes, their recognition as a unique condition remains in its infancy. Elderly patients are at risk of developing skin tears due to increased skin fragility and other contributing risk factors. In order to provide (cost-) effective prevention, patients at risk should be identified in a timely manner.

Objectives: (1) To determine the point prevalence of skin tears and (2) to identify factors independently associated with skin tear presence in nursing home residents.

Methods: A cross-sectional observational study was set up, including 1153 residents in 10 Belgian nursing homes. Data were collected by trained researchers and study nurses using patient records and skin observations. A multiple binary logistic regression model was designed to explore independent associated factors (significance level $\alpha < 0.05$).

Results: The final sample consisted of 795 nursing home residents, of which 24 presented with skin tears, resulting in a point prevalence of 3.0%. Most skin tears were classified as category 3 (defined as complete flap loss) according to the International Skin Tear Advisory Panel (ISTAP) Classification System and 75.0% were located on the lower arms/legs. Five independent associated factors were identified: age, history of skin tears, chronic use of corticosteroids, dependency for transfers, and use of adhesives/dressings.

Conclusions: This study revealed a skin tear prevalence of 3.0% in nursing home residents. Age, history of skin tears, chronic use of corticosteroids, dependency for transfers, and use of adhesives/dressings were independently associated with skin tear presence.

1. Introduction

Maintaining and improving skin health is internationally recognised as one of the salient quality indicators across the entire continuum of

health care settings. Evidence-informed practices to promote skin integrity and prevent breakdown are strongly recommended to safeguard patient safety, minimise risks, benchmark performance, and deliver care that is more cost-effective compared to wound treatment [1–3].

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With an ageing population, age-related skin conditions are increasingly prevalent, demanding a shift in knowledge, attitude, and practice to address skin health. Ageing is associated with anatomical and physiological skin changes as evident by the flattening of the dermo-epidermal junction, loss of cutaneous collagen, and reduction in subcutaneous tissue, rendering the skin more fragile and less elastic [2,4,5]. In addition to age-related skin changes, other risk factors such as immobility, sensory impairment, functional and cognitive disorders, multi-morbidities, and incontinence may make older individuals more susceptible to developing a broad range of skin injuries, with skin tears being one of the most prevalent conditions [2,4].

Skin tears are common acute wounds, occurring frequently in the elderly population [6]. The International Skin Tear Advisory Panel (ISTAP) defines skin tears as “traumatic wounds caused by mechanical forces, including removal of adhesives. Severity may vary by depth (not extending through the subcutaneous layer)” [7]. Skin tears can occur on all areas of the body and are particularly common on the extremities [8].

Although skin tears are often unnoticed as they are shallow traumatic wounds, some experts feel they are more prevalent than pressure injuries [1,6]. Studies in acute care settings have reported skin tear prevalence to be between 3.3% and 17% [6,9–13]. In long-term care facilities, skin tear prevalence is slightly higher, ranging from 3.9% to 26% [14–20]. Prevalence studies of skin tears are limited, and most of them were conducted in Australia, Canada, Asia and the United States [6,21].

Previous studies have identified both modifiable and non-modifiable risk factors for skin tear development [21]. Non-modifiable risk factors include skin changes associated with advanced age, the presence of oedema and ecchymosis, spasticity, haematoma, impaired mobility, being bedridden, dependence on others for activities of daily living such as dressing, feeding and transfers, evidence of a previously healed skin tear, increased pressure ulcer risk, history of falls, sensory deficits, cognitive impairment, and aggressive behaviour. Use of adhesives, assistive devices (orthoses/prostheses), feeding tubes and wheelchairs, poor nutritional intake, and polypharmacy have been reported as modifiable risk factors that contribute to the development of skin tears [6,8,14,21–25,44].

Skin tears are often underestimated and trivialised, leading to sub-optimal prevention and delayed or inappropriate management [26]. The consequence of mismanagement can be serious, predisposing individuals to intractable pain, negative mood states (anxiety), delayed wound healing, infection, and diminished quality of life. From a health economic perspective, skin tears may be associated with prolonged hospitalisation, intensive care needs, and high health care costs [1,6,8,9,15,16,22,23,26,27]. Clinical experts agree that there are measures to prevent skin tears or minimise its severity [21]. However, reliable predictive models based on associated factors to accurately identify people at risk for skin tear development are lacking. By identifying key factors associated with skin tear presence, targeted strategies can be customised to prevent skin tears in the most vulnerable populations. There is some evidence that risk assessment and preventative measures are effective to reduce the occurrence of skin tears [14,21,22]. Knowledge about prevalence and associated factors will aid in the allocation of resources and support the operationalisation of outcomes that are relevant, meaningful, and achievable to patients, professionals, and payers [21]. Studies that focus on skin tears are generally limited [6,9,14,15,21,23,27,28], and to date there are no studies that have investigated prevalence and associated factors in Belgium.

The aim of this study was to determine the prevalence of skin tears and to explore factors independently associated with skin tear presence in residents at nursing homes in Belgium.

2. Methods

2.1. Study design

A cross-sectional observational study was designed.

2.2. Settings and participants

Nursing homes located in East and West Flanders (Belgium) with at least 90 beds ($n = 62$) were eligible to take part in the study. A random sample of ten nursing homes that met these inclusion criteria was selected using an online random list generator. The management of the ten selected nursing homes was contacted and given a thorough description of the study by the researchers, after which they all consented to participate. All residents admitted to one of these ten nursing homes ($n = 1153$) were eligible to take part and they or their representatives were provided with information and asked for participation by the researchers. Seven hundred ninety-five residents consented to participate.

2.3. Data collection

Data were collected by two researchers between October 2017 and March 2018. In each participating nursing home, a local certified wound care nurse (study nurse) assisted with data collection in order to enhance the completeness and reliability of the data. The ten study nurses were trained by the researchers in the identification and categorisation of skin tears in order to properly differentiate skin tears from pressure ulcers and incontinence-associated dermatitis (IAD).

A standardised data collection form was developed based on literature review, clinical expertise of the research group, and expert consultations (Fig. 1). Face validity was established by a panel of experts in skin integrity research. Data were obtained from patient health records and direct skin examination at the bedside. Each participant's skin status was assessed simultaneously by the researchers and the study nurse. In case of disagreement or when a skin tear was present, high definition photographs were taken and reviewed by an expert in skin integrity research to confirm the diagnosis and classification.

2.4. Measurement instruments

Skin tears were assessed and classified using the validated ISTAP Classification System (Fig. 2) [29]. Using this system, skin tears were classified as type 1 (no skin/flap loss), type 2 (partial skin/flap loss), or type 3 (complete flap loss).

The ‘Mobility Gallery’ assessment tool was used to determine the mobility level of the participants [30]. This validated classification system is based on five different levels of functional mobility, ranging from A (active/completely mobile) to E (passive/entirely bedridden).

Dependency for ADL was assessed using the validated Katz ADL scale, which scores six activities (bathing, dressing, transferring, toileting, continence, and feeding) from 0 (dependent/assistance required) to 1 (independent/no assistance required) [31].

2.5. Data analysis

Data were analysed using IBM® SPSS® Statistics (Version 24, IBM Corporation, New York, NY). Categorical variables were described using frequencies (percentages). The only continuous variable, age, was found to be normally distributed using a Q-Q plot, box-and-whisker plot, and Shapiro-Wilk test, and thus described using mean and standard deviation (SD).

Skin tear prevalence was calculated by dividing the number of participants with one or more skin tears present at the time of

SKIN TEAR PREVALENCE AND RISK FACTORS: Data collection form				GENERAL HEALTH			
Nursing home		Identification number		Chronic diseases			
1. DEMOGRAPHIC DATA				- Cardiovascular disease			
Gender	M / F	Age		Yes / No			
Skin colour	White (Caucasian) / Dark (Mongoloid) / Black (Negroid)			- Pulmonary disease			
2. OBSERVATIONAL DATA (SKIN TEAR PREVALENCE)				Yes / No			
Presence of skin tears?	Yes / No			- Diabetes			
Current # of skin tears per category (ISTAP)	Category 1:	Category 2:	Category 3:	Medications			
Location	Category (ISTAP)	Current # of skin tears per location		- Antiaggregants			
- Arms	1			Yes / No			
	2			- Anticoagulants			
	3			Yes / No			
- Hands	1			- Antibiotics			
	2			Yes / No			
	3			- Antihypertensives			
- Legs	1			Yes / No			
	2			- Analgesics			
	3			Yes / No			
- Feet	1			- Antidepressants			
	2			Yes / No			
	3			- Statins			
3. POTENTIAL RISK FACTORS				Yes / No			
SKIN				- Antihistamines			
Other current skin problems	Yes / No			Yes / No			
- Haematoma	Yes / No	- Thin skin	Yes / No	Polypharmacy (> 5 meds)			
- Oedema	Yes / No	- Dry skin	Yes / No	Yes / No			
History of skin tears	Yes / No			Cognitive disorder			
				Yes / No			
				Sensory disorder			
				Yes / No			
				Visual disorder			
				Yes / No			
				Auditory disorder			
				Yes / No			
				Spasticity			
				Yes / No			
				MOBILITY			
				Mobility level ('Mobility Gallery')			
				A / B / C / D / E			
				Dependency for ADL (Katz ADL scale)			
				- Bathing			
				0 / 1		- Toileting	
						0 / 1	
				- Dressing		- Continence	
				0 / 1		0 / 1	
				- Transferring		- Feeding	
				0 / 1		0 / 1	
				Mobility aids			
				No aids / Cane / Crutch / Walker / Wheelchair			
				Transfer aids			
				No aids / Active lifter / Passive lifter			
				EXTRINSIC FACTORS			
				Adhesives/dressings			
				Yes / No			
				Prosthesis (Upper/lower extremities)			
				Yes / No			
				Antithrombotic stockings			
				Yes / No			

Fig. 1. Data collection form.

ISTAP Skin Tear Classification



Fig. 2. International Skin Tear Advisory Panel (ISTAP) Skin Tear Classification System.

observation by the total number of residents participating in the study.

In order to identify factors independently associated with skin tear presence, a multiple binary logistic regression model was designed [32]. In a first step, all variables were analysed for significant association with skin tear presence in single binary logistic regression analyses. Variables with $p < 0.05$ in the single analyses were considered statistically significant and pairwise tested for collinearity using chi square test or independent sample *t*-test. In case of collinearity between two variables ($p < 0.05$), the variable most strongly associated with skin tear presence was included.

In a second step, all variables that were statistically significant in the single analyses and not mutually correlated were combined into a

multiple binary logistic regression model. Using the Backward Wald method, the least significant variables were removed one by one from the model until all variables remaining had a value of $p < 0.05$ in the analysis of effect. Nagelkerke R^2 and Hosmer-Lemeshow statistic were calculated as measures of model fit [33]. The tolerance and variance inflation factor were calculated to identify multicollinearity between the variables in the model. The significance level was set at $\alpha < 0.05$.

2.6. Ethical approval and trial registration

This study was performed in accordance with the ethical guidelines of the Declaration of Helsinki and approved by the Ethics Committee of Ghent University Hospital (B670201733162). Confidentiality and anonymity of the participants were guaranteed. All participants or their representatives provided oral and written informed consent.

3. Results

3.1. Characteristics of the participants

The study sample consisted of 795 participants (68.9% female, mean (SD) age: 85 (8.6) years), representing a 69% response rate. Thirty-one percent of residents were not available for data collection due to hospitalisation or refusal to participate. Table 1 provides an overview of the sample characteristics.

Table 1
Characteristics of the participants (n = 795).

Characteristics	N	n (%) / Mean (SD)
Gender	795	
Male		247 (31.1)
Female		548 (68.9)
Age (years) [Mean (SD)]	795	85.0 (8.6)
Skin colour	795	
White (Caucasian)		790 (99.4)
Dark (Mongoloid)		5 (0.6)
Black (Negroid)		0 (0.0)
Chronic diseases	795	
Cardiovascular disease		485 (61.0)
Pulmonary disease		119 (15.0)
Diabetes		153 (19.3)
Mobility level (Knibbe)	795	
Level A		196 (24.7)
Level B		316 (39.7)
Level C		194 (24.4)
Level D		63 (7.9)
Level E		26 (3.3)
History of skin tears	770	218 (28.3)

SD: standard deviation.

Table 2
Skin tear prevalence.

	N	n (%)
Participants with one or more skin tears	795	24 (3.0)
Total skin tears observed		28
Skin tear type (ISTAP)		
Type 1		9 (32.1)
Type 2		7 (25.0)
Type 3		12 (42.9)
Location (upper/lower extremities)		
Arm		15 (53.6)
Upper arm		6 (21.4)
Lower arm		9 (32.1)
Hand		1 (3.6)
Leg		12 (42.9)
Upper leg		0 (0.0)
Lower leg		12 (42.9)
Foot		0 (0.0)

3.2. Skin tear prevalence

Skin tears were detected in 24 out of the 795 participants, resulting in a point prevalence of 3.0% (Table 2). A total of 28 skin tears were observed in these 24 participants. The majority of skin tears were classified as type 3 (n = 12, 42.9%). Skin tears were predominately located on the lower arms (n = 9, 32.1%) and lower legs (n = 12, 42.9%).

3.3. Factors associated with skin tear presence

Single binary logistic regression revealed 17 variables significantly associated with skin tear presence (p < 0.05) (Table 3).

Prior to composing a multiple binary logistic regression model, the 17 univariate significant variables were tested for collinearity. Two variables for the assessment of ADL dependency, including 'dependency for transfers' and 'dependency for feeding', were correlated ($\chi^2 = 112.835$, DF = 2, p < 0.001). 'Dependency for transfers' was selected to be entered into the model because this variable was most strongly associated with skin tear presence (OR = 5.58; 95% CI = 1.65–18.87; p = 0.006).

After step-by-step elimination of the least significant variable according to the Backward Wald method, a final model consisting of five independent associated factors for skin tear presence was reached (Table 4). Age (OR = 4.03; 95% CI = 1.29–12.61; p = 0.017), history

of skin tears (OR = 3.83; 95% CI = 1.30–11.32; p = 0.015), chronic use of corticosteroids (OR = 2.96; 95% CI = 1.06–8.53; p = 0.044), dependency for transfers (OR = 3.74; 95% CI = 1.09–13.31; p = 0.042), and use of adhesives/dressings (OR = 7.05; 95% CI = 2.74–18.14; p < 0.001) were significantly associated with skin tear presence in nursing home residents.

The Nagelkerke R² showed that 33.0% of variance in the presence of skin tears is explained by our multiple binary logistic regression model. The Hosmer-Lemeshow goodness of fit test indicated no significant difference between the observed and the expected values ($\chi^2 = 3.65$, DF = 6, p = 0.724). The tolerance values were above 0.4, indicating acceptable correlations between the independent variables in the final model [33].

4. Discussion

This study aimed to determine the prevalence of skin tears and to identify factors independently associated with skin tear presence in residents at nursing homes in Belgium.

This study is the first prevalence investigation of skin tears in Belgian nursing homes and revealed a prevalence rate of 3.0%. It is noteworthy that more than a quarter of all participants (28.3%) had a history of skin tears. Previous studies in long-term care facilities in other countries reported skin tear prevalence rates between 3.9% and 26% [14–20]. To date, only one other skin tear prevalence study was performed in European nursing homes. In their study, Skiveren et al. (2017) reported a prevalence rate of 4.6% in a Danish nursing home [20]. The wide variety in prevalence rates may be attributed to differences in prevention and management practices, diagnostic criteria, nursing staff, knowledge, and equipment between countries, but further research on this topic is required. Although skin tears can occur on any area of the body, most skin tear prevalence studies (including the current study) only examine the extremities. Inability to conduct a thorough examination of the full body may lead to omission and underreporting of skin tears. Previous studies are fraught with methodological issues including relatively small, single-site samples, and thus caution is recommended when interpreting the relevance and generalisability of their findings. Similar to findings from previous studies, our research findings showed that the majority of skin tears (57.2%) occurred on the upper extremities [7,9,10,14,15,19,20]. Most skin tears (42.9%) were classified as type 3 according to the ISTAP Classification System. In previous studies, skin tears were mainly categorised using the Skin Tear Audit Research (STAR) Classification System and the Payne-Martin Classification System [9,10,13–15]. Only two recent studies, performed in nursing homes, also used the ISTAP Classification System [19,20]. In these two studies, type 1 skin tears were most common (38.0% and 40.0%).

In our multivariate analyses, we found that age, history of skin tears, chronic use of corticosteroids, dependency for transfers, and use of adhesives/dressings appeared to be independently associated with skin tear presence in nursing home residents. The associated factors identified were theoretically supported and in accordance with findings from other studies. In nursing home residents aged ≥ 87 years, the odds of presenting with skin tears was 4.03 times as high as in residents aged < 87 years. In their study, Lewin et al. (2016) also reported advanced age as being a major predictor for skin tear development (OR = 1.06; p < 0.001) [24]. Due to physiological changes associated with ageing, the elderly population is particularly vulnerable for developing skin tears. Experts agree that this increased skin vulnerability can be explained by two reasons: the weakening of the skin and susceptibility to trauma [22]. The natural ageing process of the skin includes thinning of the epidermis and a loss of dermal and subcutaneous tissue due to decreased production of collagen, resulting in a reduced cohesion between the skin layers. Because of this, the epidermis can be more easily separated from the underlying dermis. In addition, the skin becomes more dehydrated, dry, and inelastic, increasing the risk of

Table 3
Univariate binary logistic regression for association between possible associated factors and skin tears (n = 795).

	Participants with skin tears (n = 24) n (%) / Mean (SD)	Participants without skin tears (n = 771) n (%) / Mean (SD)	P value	OR (CI)
Age (years) [Mean (SD)]	91.00 (7.5)	84.85 (8.6)	0.003	5.07 (1.72–14.96)
History of skin tears	19 (79.2)	199 (26.7)	< 0.001	10.45 (3.85–28.35)
Haematoma	14 (58.3)	157 (20.4)	< 0.001	5.46 (2.38–12.52)
Oedema	12 (50.0)	185 (24.0)	0.006	3.17 (1.34–7.17)
Thin skin	20 (83.3)	332 (43.2)	0.001	6.58 (2.23–19.44)
Dry skin	22 (91.7)	387 (50.3)	0.001	10.86 (2.54–46.49)
Pulmonary disease	8 (33.3)	111 (14.4)	0.014	2.97 (1.24–7.11)
Antibiotics	4 (16.7)	41 (5.3)	0.026	3.56 (1.16–10.90)
Antidepressants	4 (16.7)	287 (37.2)	0.049	0.34 (0.11–0.99)
Corticosteroids	7 (29.2)	67 (8.7)	0.002	4.33 (1.73–10.80)
Mobility level D	5 (20.8)	58 (7.5)	0.022	3.30 (1.19–9.15)
Mobility level E	3 (12.5)	23 (3.0)	0.022	4.45 (1.24–15.93)
Dependency for transfers	21 (87.5)	429 (55.6)	0.006	5.58 (1.65–18.87)
Dependency for feeding	13 (54.2)	255 (33.1)	0.036	2.39 (1.06–5.41)
Wheelchair	18 (75.0)	369 (47.9)	0.013	3.27 (1.28–8.32)
Passive lifter for transfers	6 (25.0)	78 (10.1)	0.026	2.96 (1.14–7.68)
Adhesives/dressings	16 (66.7)	102 (13.2)	< 0.001	13.12 (5.47–31.43)

SD: standard deviation, OR: odds ratio, CI: confidence interval.

Table 4
Multivariate binary logistic regression for association between possible associated factors and skin tears.

	P value	OR (CI)	Tolerance	Variance inflation factor
Age	0.017	4.03 (1.29–12.61)	0.988	1.012
History of skin tears	0.015	3.83 (1.30–11.32)	0.993	1.007
Corticosteroids	0.044	2.96 (1.06–8.53)	0.990	1.010
Dependency for transfers	0.042	3.74 (1.09–13.31)	0.980	1.020
Adhesives/dressings	< 0.001	7.05 (2.74–18.14)	0.982	1.018

OR: odds ratio, CI: confidence interval.

Nagelkerke R² = 0.330; Hosmer-Lemeshow: $\chi^2 = 3.65$, degrees of freedom (DF) = 6, p = 0.724.

developing skin tears even more [9,22,34–36]. Almost 80% of the residents observed with skin tears, had a history of skin tears. In residents with a history of skin tears, the odds of presenting with skin tears was almost four times as high as in residents without a history of skin tears. Similarly, in the studies of Sanada et al. (2015), Lewin et al. (2016), and Bermark et al. (2017), having a history of skin tears was identified as a factor independently associated with skin tear development [6,23,24]. Experts suggest that skin tears frequently occur in individuals who have a history of skin tears as a result of the reduced tensile strength of scar tissue [9,19]. An alternative explanation may be that having a history of skin tears simply indicates that an individual's skin is particularly susceptible to tearing and/or that one's skin is subject to more frequent trauma due to their own or others' behaviour [24]. The third associated factor identified, chronic use of corticosteroids, was also determined as an important risk factor in the studies of Sanada et al. (2015) and Koyano et al. (2016) [23,37]. Prolonged use of corticosteroids can be considered as a risk factor for skin tear development due to potential side effects of the altered collagen synthesis [14]. Corticosteroids are known to regulate the expression of genes encoding collagens, elastin, matrix metalloproteinases (MMPs), and tissue inhibitors of MMPs, and it is supposed that corticosteroids greatly increase skin atrophy associated with skin changes in the ageing population [19]. Dependency for transfers was the fourth associated factor identified. This finding is similar to the findings of LeBlanc et al. (2011) and Lewin et al. (2016), who reported that there is a significant increased risk for developing skin tears when assistance is required for transferring [24,26]. In their study, Carville et al. (2014) showed that more than 11% of all skin tears occur during transfer activities [38]. During transferring, skin tears may be caused by medical devices, such as beds, bed rails, lifters, and wheelchairs, as well as by assistance from others [26–28,39]. Use of adhesives/dressings was the factor most strongly associated with skin tear presence. In residents with adhesives/dressings on the extremities,

the odds of presenting with skin tears was 7.05 times as high as in residents without adhesives/dressings. In a survey conducted by LeBlanc et al. (2011), adhesive/dressing removal belonged to the top three causes of skin tears [26]. Adhesive/dressing removal may cause skin tears due to external forces this intervention applies to the skin surface [14,39]. Although we identified five independent associated factors, some skin tear associated factors identified in other studies, such as haematoma, ecchymosis, purpura, and oedema, were not confirmed [7,20,21,24]. In our study, no distinction was made between haematoma, ecchymosis, and purpura because these variables are difficult to distinguish from each other. The presence of haematoma and oedema were univariate significant associated factors, but were not statistically significant in the multivariate analyses.

The results showed that a significant proportion of the associated factors identified are modifiable factors. In order to reduce the occurrence of skin tears, there should be preventively focused on these associated factors so that skin integrity is maintained and injuries are avoided. In addition, skin tear prevalence and incidence rates should be used as an indicator and a benchmark for quality of care [21]. Primary prevention is considered as the best strategy for managing these largely avoidable wounds and can include, for example, the use of skin-friendly adhesives/dressings and removal techniques, long sleeves/pants/gloves as a protective barrier, padding on bed rails/wheelchair arm and leg supports/other equipment, and educating health care professionals/patients/family concerning appropriate positioning/transferring techniques and skin-friendly equipment, preferably by occupational/physical therapists [21,40]. Furthermore, (future) health care professionals should be educated in recognizing and reporting skin tears as these wounds are often unnoticed and unreported, and in identifying patients at risk [41]. Our findings may support a more accurate skin tear risk assessment which promotes early identification of high risk patients. Clear prevention programs, including the identification of patients at

risk, will reduce the incidence of skin tears [40]. Further research on the effectiveness of preventive interventions in patients at risk for skin tears is needed. In a recent study, Woo et al. (2018) concluded that skin tears and pressure ulcers share common risk factors, and that therefore a bundled approach to wound prevention should be developed [42]. In addition, studies that explore skin tear risk factors, prevalence and incidence across various populations and health care settings, preferably by using a validated data collection instrument, are strongly required [15,19,21].

4.1. Strengths and limitations

Our study was a large multisite study, including 1153 residents from ten randomly selected Belgian nursing homes. The response rate was high (69%) and the study sample was representative of the entire population residing in Belgian nursing homes in terms of age, gender, and mobility level [43]. This all increases the generalisability of our findings. Furthermore, data collection was performed on site jointly by the two researchers, experienced in the assessment and classification of skin tears, and a trained study nurse. In case of disagreement or when a skin tear was present, high definition photographs were taken and reviewed by an expert in skin integrity research. This all optimised the validity and reliability of our results.

The main limitation of this study was the low event rate, leading to wide confidence intervals of the factors associated with skin tear presence in the multivariate analyses. Although skin tears can occur on any area of the body, we only examined the extremities which may lead to underreporting. Due to the cross-sectional character of our study, we were not able to study causal associations between potential associated factors and skin tear presence as would be possible in a longitudinal design. Besides, data collection was mainly focused on identifying health-related associated factors. However, the occurrence of skin tears may also depend upon nurse-related factors (e.g. knowledge and attitude) and external/environmental factors (e.g. the absence of padding on bed rails, wheelchair arm and leg supports, and other equipment) [27].

5. Conclusions

This study revealed a skin tear prevalence of 3.0% in Belgian nursing home residents. Age, history of skin tears, chronic use of corticosteroids, dependency for transfers, and use of adhesives/dressings were independently associated with skin tear presence. These associated factors are theoretically supported and provide useful guidance to identify patients at risk in need for specific skin tear prevention strategies. Further research across the continuum of health care settings is needed to determine the true extent of skin tears and factors that contribute to their development.

Declarations of interest

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