

ORIGINAL ARTICLE

Skin tear prevalence in an Australian acute care hospital: A 10-year analysis

Sandra J. Miles^{1,2}  | Paul Fulbrook^{1,2,3}  | Damian M. Williams⁴ 

¹School of Nursing, Midwifery and Paramedicine (Brisbane), Faculty of Health Sciences, Australian Catholic University, Virginia, Queensland, Australia

²Nursing Research and Practice Development Centre, The Prince Charles Hospital, Chermside, Queensland, Australia

³Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

⁴Wound Management, Clinical Effectiveness Program, The Prince Charles Hospital, Chermside, Queensland, Australia

Correspondence

Paul Fulbrook, RN, PhD, MSc, BSc (Hons), Honorary Professor, Nursing Director, Nursing Research and Practice Development Centre, The Prince Charles Hospital, Rode Rd, Chermside, QLD 4032, Australia.
Email: paul.fulbrook@acu.edu.au

Abstract

Hospital-acquired skin tear prevalence is under-reported; thus, the aim of this study was to analyse skin tear point prevalence and characteristics in a tertiary acute care hospital in Queensland, Australia, over a 10-year period. All consenting adult inpatients received a full skin inspection and skin tear category, site, cause, treatment, and whether it was documented as hospital- or community-acquired were recorded. Eleven prevalence audits were analysed with a total sample of 3626 patients. An overall pooled prevalence of 8.9% (95% confidence interval [CI] 7.5-10.4) with an associated hospital-acquired pooled prevalence of 5.5% (95% CI 4.5-6.7) was found. In total, 616 skin tears were reported, of which 374 (60.7%) were hospital-acquired. Over a third of patients (38.7%) had multiple skin tears and most patients (84.8%) with at least one skin tear were aged ≥ 70 years. The largest proportion of skin tears (40.1%) was those with no skin flap. Of those documented, most were caused by falls or collisions, suggesting combined skin tear and falls prevention strategies may be effective. Over a decade, there was a downward trend in hospital-acquired skin tear, which is encouraging. Skin tear prevalence is recommended as a measure of care quality with an emphasis on good quality documentation.

KEYWORDS

acute care, hospital-acquired, prevalence, skin tears, wound management

Key Messages

- while most skin tears are relatively minor, they can cause discomfort and pain, and may consume valuable health care resources
- in acute care settings, skin tear prevalence has been reported to be between 6% and 11%; however, there are very few reports of hospital-acquired skin tear prevalence
- the aim of this study was to analyse skin tear point prevalence and characteristics in a tertiary acute care hospital over a 10-year period
- the pooled prevalence of hospital- and community-acquired skin tears over 10 years was 5.5% and 3.9%, respectively, with the majority of skin tears

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *International Wound Journal* published by Medicalhelplines.com Inc (3M) and John Wiley & Sons Ltd.

occurring in those aged ≥ 70 years, and as a result of collisions or falls, although cause was not well documented

- combined skin tear and falls prevention strategies are recommended as is use of skin tear prevalence as a measure of care quality

1 | INTRODUCTION

As a cause of patient harm, hospital-acquired skin tears present a challenge for health care organisations. Although most skin tears are relatively minor injuries, they cause pain and decrease quality of life for those affected.¹ Contributing factors include reduced mobility, cognition and sensation, the need for transfer on hospital equipment,^{1,2} malnutrition³ and conditions that affect the ability of the skin to resist shear, friction and blunt force, including frail skin in the elderly and altered skin condition from illness, poor hygiene or inadequate skin care.⁴ For those with altered immunity or poor health status, skin tears may become infected or develop into chronic wounds.⁵ Treatment of skin tears consumes valuable health care resources⁶ including the cost of wound dressings and staff resources and, in the hospital setting, may increase length of stay.¹

Internationally, skin tear point prevalence in long-term aged care settings has been reported between 3.0% and 20.8%.^{5,7-10} However, prevalence in this setting is not generalisable to other settings, and it is difficult to quantify the prevalence of hospital-acquired skin tear as it is underreported⁵ and most prevalence studies do not differentiate between community- and hospital-acquired skin tear. In a systematic review,¹¹ skin tear prevalence in the hospital setting was reported between 3.3% and 22%; however, the data were obtained from six relatively old studies published between 2004 and 2014; of which two were Australian.^{12,13} In the largest Australian study,¹³ which surveyed 5801 patients, skin tear prevalence was 7.9% and 10.8% in consecutive years. Significantly, skin tear represented between 11.9% and 16.7% of all hospital-acquired wounds and was the largest group of wounds in the aged care cohort.¹³ In the earlier, much smaller, study ($n = 187$), skin tear prevalence was 10.7%.¹² More recent studies in acute hospital settings have reported skin tear point prevalence of 8.1% over 6 years in Australia ($n = 2197$)³ and 11.4% in Denmark ($n = 202$).¹⁴ In the latter study, a history of previous skin tears, risk of falling and ecchymosis were found to be statistically significantly associated with skin tear, however only wounds on limbs were reported, suggesting that true prevalence may have been higher.¹⁴ All of these studies appear to have included community-acquired (or present on admission [POA]) skin tears in their results. In a Singaporean study across two medical wards ($n = 144$),¹⁵ hospital-acquired skin tear

point prevalence of 6.2% was reported, with the majority found on the lower extremities (57%) and a large proportion (43%) of the most severe skin tear category (skin flap absent); however, skin tears were classified as hospital-acquired because there was no nursing documentation to indicate otherwise. The lack of clarity around documentation and reporting of skin tear prevalence has been noted as reflecting a lack of focus on skin tear prevention.^{4,16}

Given the context described above, the aim of this study was to analyse hospital-acquired skin tear point prevalence over a 10-year period in an acute hospital setting.

2 | METHODS

2.1 | Design

A hospital-wide annual audit was used to collect skin tear data. Approval for use of the audit data for research was granted by the relevant data custodians and ethical approval was obtained from the study hospital's research ethics committee (HREC/16/QPCH/171).

2.2 | Setting and sample

The setting was a 630-bed tertiary general hospital in south-east Queensland, Australia in which annual skin integrity audits were conducted as part of a larger state-wide hospital audit. For the purpose of this study, all adult (≥ 18 years) inpatients who provided consent for a full skin inspection on the day of each annual audit were included. Because of incomplete audits, mental health and palliative care patients were excluded.

2.3 | Data collection

Skin tear data were collected annually hospital-wide on a single audit day in March from 2009 until 2011, when data were also collected in November to align with the state-wide Queensland Bedside Audit (Queensland Health, 2012),¹⁷ and subsequently in October or November from 2012 to 2018. This resulted in 11 audit events across the 10 years. Audits were conducted across all wards within the hospital and all adult inpatients were invited to participate.

TABLE 1 Skin tear prevalence

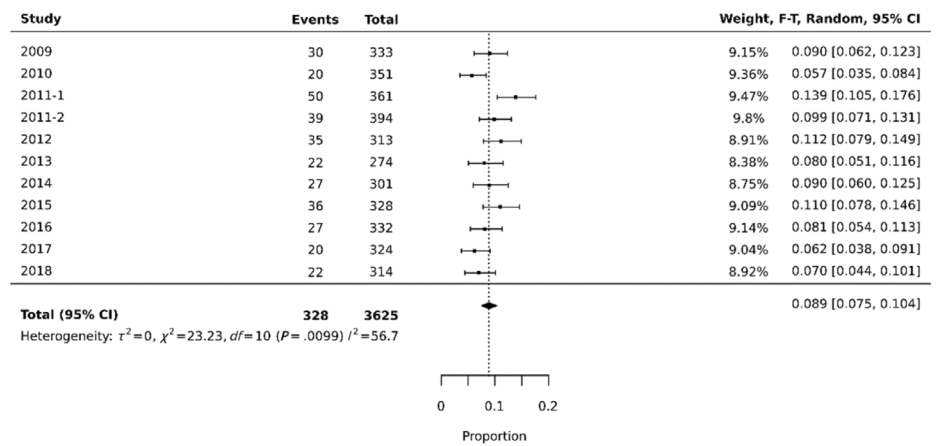
Audited item and measures used	2009	2010	2011-1	2011-2	2012	2013	2014	2015	2016	2017	2018	Overall
Consented to skin inspection n	333	351	361	394	313	274	301	328	332	324	314	3625
Skin tear prevalence % (n)	8.7 (30)	5.7 (20)	13.3 (50)	9.9 (39)	11.2 (35)	8.0 (22)	9.0 (27)	11.0 (36)	8.1 (27)	6.2 (20)	7.0 (22)	9.1 (328)
Male proportion with skin tear % (n)	53.3 (16)	55.0 (11)	44.0 (22)	56.4 (22)	65.7 (23)	63.6 (14)	51.9 (14)	61.1 (22)	55.6 (15)	55.0 (11)	45.5 (10)	54.9, 95% CI 49.3-60.4 (180)
^a Hospital-acquired skin tear prevalence % (n)	6.7 (22)	4.3 (14)	11.0 (36)	7.9 (26)	7.3 (24)	4.3 (14)	5.2 (17)	5.2 (17)	4.0 (13)	4.0 (13)	3.4 (11)	5.7 (207)
^a Community-acquired (POA) skin tear prevalence % (n)	3.7 (12)	2.1 (7)	4.6 (15)	4.3 (14)	4.6 (15)	2.7 (9)	4.0 (13)	6.4 (21)	4.9 (16)	3.0 (10)	3.4 (11)	3.9 (143)
Skin tear sample: mean age (SD)	79.7 (10.3)	82.0 (9.6)	81.4 (13.8)	82.0 (7.1)	81.0 (11.5)	77.1 (10.9)	81.5 (9.4)	74.9 (12.4)	80.8 (6.4)	77.8 (9.1)	76.2 (11.0)	79.7 (10.8)
Skin tear sample: age ≥70 years % (n)	86.7 (26)	90.0 (18)	88.0 (44)	92.3 (36)	88.6 (31)	72.7 (16)	85.2 (23)	75.0 (27)	92.6 (25)	80.0 (16)	72.7 (16)	84.8, 95% CI 80.4-88.5 (278)
Skin tear total n	52	31	104	79	63	35	57	69	49	40	37	616
Hospital-acquired skin tear % (n)	53.8 (28)	77.4 (24)	76.0 (79)	81.0 (64)	74.6 (47)	62.9 (22)	42.1 (24)	31.9 (22)	55.1 (27)	52.5 (21)	43.2 (16)	60.7, 95% CI 56.7-64.6 (374)
Community-acquired (POA) skin tear % (n)	46.2 (24)	22.6 (7)	24.0 (25)	19.0 (15)	25.4 (16)	37.1 (13)	57.9 (33)	68.1 (47)	44.9 (22)	47.5 (19)	56.8 (21)	39.3, 95% CI 35.4-43.3 (242)

Abbreviations: CI, confidence interval; POA, present on admission.

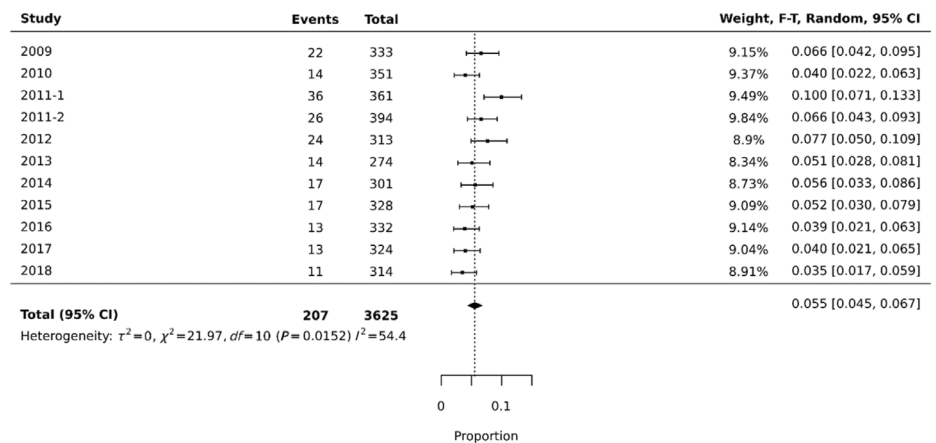
^aTwenty-two patients had both hospital- and community-acquired skin tears.

FIGURE 1 A, Forest plot—all skin tears. B, Forest plot—hospital-acquired skin tears. C, Forest plot—community-acquired skin tears

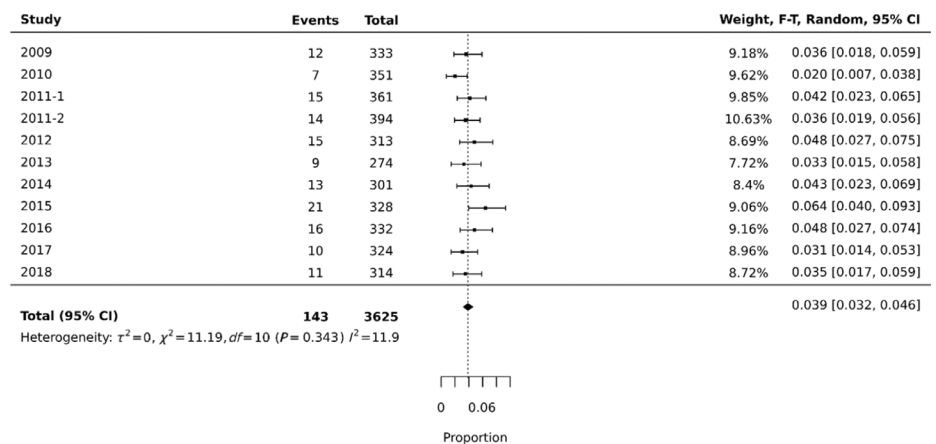
(A) Forest plot – all skin tears



(B) Forest plot – hospital acquired skin tears



(C) Forest plot – community acquired skin tears



Data were collected on a paper-based audit form by trained multidisciplinary auditors, who had undergone a mandatory 4-hour training program to correctly identify, categorise, and record skin tears. All skin tears were validated and classified by specialised wound management nursing and

podiatry staff who had undergone additional 4-hour training and assessment. On each audit day, a team of over 100 auditors worked in pairs to collect data on all audit items, which included conducting a full body (head to toe) skin inspection to identify skin tears.

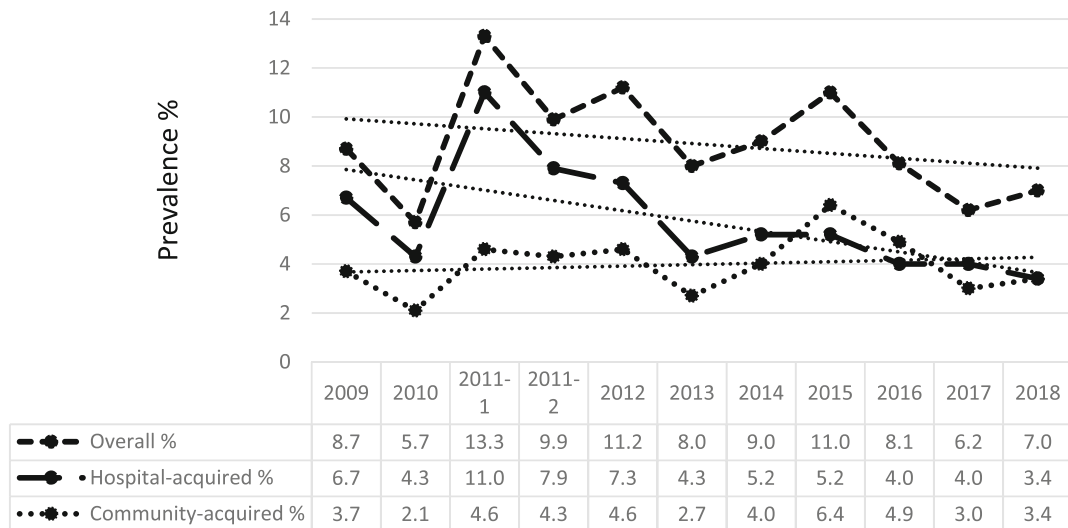


FIGURE 2 Skin tear prevalence trend

TABLE 2 Skin tear category

Skin tear category n (%)						
STAR category	1A	1B	2A	2B	3	Overall total
ISTAP category	1		2		3	
Hospital-acquired	26 (7.0) (54.2)	64 (17.1) (59.3)	13 (3.5) (54.2)	125 (33.4) (66.1)	146 (39.0) (59.1)	374 (100) (60.7)
Category sub-total	90 (24.1) (57.7)		138 (36.9) (64.8)			
Community-acquired	22 (9.1) (45.8)	44 (18.2) (40.7)	11 (4.5) (45.8)	64 (26.4) (33.9)	101 (41.7) (40.9)	242 (100) (39.3)
Category sub-total	66 (27.3) (42.3)		75 (31.0) (35.2)			
Total	48 (7.8) (100)	108 (17.5) (100)	24 (3.9) (100)	189 (30.7) (100)	247 (40.1) (100)	616 (100) (100)
Category sub-total	156 (25.3) (100)		213 (34.6) (100)			

Patient demographics, wound location and cause, and compliance with treatment and incident-reporting on the hospital's wound assessment form were recorded. Skin tears were classified as community-acquired if documented in the patient's medical records as being POA to the hospital, or hospital-acquired if occurrence followed admission. For best practice, in the absence of documentary evidence in the patient's records to indicate a skin tear was POA, it was categorised as hospital-acquired. Skin tears were categorised using the five-category Skin Tear Audit Research (STAR) classification system described elsewhere.¹⁸

2.4 | Data analysis

Data were entered manually into an Excel database and imported into SPSS for analysis. Prevalence was calculated as: (numerator/denominator) × 100%,¹⁹ where: numerator = number of eligible consenting hospital inpatients at the time of audit who had at least one skin tear; denominator = total number of eligible hospital inpatients at the time of the audit

who consented to a skin inspection. Meta-analysis of the prevalence studies was performed using the Joanna Briggs Institute *System for the Unified Management, Assessment and Review of Information* software. Random effects modelling was applied to obtain pooled estimates of proportion. Prior to calculation of overall effect size, data were transformed using Freeman-Tukey double arcsine transformation. Skin tear categories are reported according to both the STAR¹⁸ and the more current best practice International Skin Tear Advisory Panel (ISTAP)⁴ classification systems, with the STAR sub-categories combined to equate to the relevant ISTAP category (ie, STAR 1a and 1b = ISTAP 1 skin flap present, 2a and 2b = 2 partial skin flap, 3 = 3 skin flap absent).

3 | RESULTS

3.1 | Sample

The total audit sample included in the 10-year analysis was 3625, with a mean annual sample size of

TABLE 3 Skin tear site (missing = 1)

	Skin tear site n (%)										Overall total	
	Upper limb					Lower limb						Other
	Upper arm	Elbow	Forearm	Hand	Upper leg	Knee	Lower leg	Foot	Head	Shoulder		Trunk
Hospital-acquired	27 (7.2)	42 (11.2)	69 (18.4)	30 (8.0)	24 (6.4)	23 (6.1)	124 (33.2)	12 (3.2)	4 (1.1)	4 (1.1)	9 (2.4)	6 (1.6)
Site sub-total	168 (44.9)	58.9	65.1	66.7	58.5	45.1	65.3	66.7	57.1	66.7	100	75.0
					48.9	61.0			6.1	76.7		60.7
Community-acquired	23 (7.0)	42 (17.1)	37 (3.5)	15 (33.4)	17 (39.0)	28 (11.6)	66 (27.4)	6 (2.5)	3 (1.2)	2 (0.8)	0 (0)	2 (0.8)
Site sub-total	117 (48.5)	41.1	34.9	33.3	41.5	54.9	34.7	33.3	42.9	33.3	0	25.0
					48.5	39.0			23.3			39.3
Total	50 (8.1)	84 (13.7)	106 (17.2)	45 (7.3)	41 (6.7)	51 (8.3)	190 (30.9)	18 (2.9)	7 (1.1)	6 (1.0)	9 (1.5)	8 (1.3)
Site sub-total	285 (46.3)	100	100	100	100	100	100	100	100	100	100	100
					48.8	100			4.9	100		100

330 (range 274-394). Of the 328 patients who had at least one skin tear, most were male ($n = 180$; 54.9%), the mean age was 79.7 years (SD 10.8; median 81.5, IQR = 74.0-87.0) with a large majority (84.8%) aged 70 years or more (see Table 1).

3.2 | Prevalence

Annual point prevalence ranged from 5.7% in 2010 to 13.3% in 2011 (see Table 1). Within 11 audits across 10 years, a total of 328 patients had at least one skin tear giving a pooled prevalence estimate of 8.9% (95% confidence interval [CI] 7.5-10.4) (see Figure 1A). Hospital-acquired point prevalence ranged from 3.4% in 2018 to 11.0% in 2011 (see Table 1). Across the 10 years, a total of 207 patients developed at least one hospital-acquired skin tear, giving a pooled prevalence estimate of 5.5% (95% CI 4.5-6.7) (see Figure 1B); and 143 patients were admitted to hospital with at least one POA skin tear, giving a pooled prevalence estimate of 3.9% (95% CI 3.2-4.6) (see Figure 1C). A total of 22 patients had both hospital- and community-acquired skin tears. As shown in Figure 2, although there was an overall trend of increased POA skin tears, hospital-acquired skin tear prevalence fell over the same period.

3.3 | Skin tear characteristics

A cumulative total of 616 skin tears was found, of which 374 (60.7%) were hospital-acquired. The proportions of skin tears by category were similar for hospital- and community-acquired skin tears, with the largest proportions in STAR¹⁸ category 3 (see Table 2), occurring mostly on the lower limbs (see Table 3). Injuries occurred on the upper and lower limbs in similar proportions (46.3% and 48.8%, respectively), with the largest proportion occurring on the lower leg (30.9%) (see Table 3). Most STAR category 1A/1B (57.7%, $n = 90$) and STAR category 2A/2B (64.8%, $n = 138$) skin tears occurred on the upper limbs, but the majority of category 3 (51.4%, $n = 127$) skin tears occurred on the lower limbs (see Table 4). Nearly two-thirds of patients (61.3%, $n = 201$) had only one skin tear. Of the remainder ($n = 127$) with multiple skin tears, most had two (41.7%, $n = 53$) or three (33.0%, $n = 42$) skin tears (range 2-13). Falls and collisions (also known as blunt trauma⁴) were the main documented causes of injury (see Table 5). Other causes of injury included accidental injuries (unspecified) caused by health care staff (2.6%, $n = 12$) or the patient (including violent behaviour) (3.4%, $n = 21$).

TABLE 4 Skin tear category by site (missing = 1)

Skin tear category n (%)						
STAR category	1A	1B	2A	2B	3	Overall total
ISTAP category	1		2		3	
Upper limb category	28 (9.8) (59.6)	49 (17.2) (45.4)	13 (4.6) (54.2)	90 (31.6) (47.6)	105 (36.8) (42.5)	285 (100) (46.3)
Sub-total	90 (24.1) (57.7)		138 (36.9) (64.8)			
Lower limb category	17 (5.7) (36.2)	56 (18.7) (51.9)	9 (3.0) (37.5)	91 (30.3) (48.1)	127 (42.3) (51.4)	300 (100) (48.8)
Sub-total	66 (27.3) (42.3)		75 (31.0) (35.2)			
Other category	2 (6.7) (4.3)	3 (10.0) (2.8)	2 (6.7) (8.3)	8 (26.7) (4.2)	15 (50.0) (6.1)	30 (100) (4.9)
Sub-total	156 (25.3) (100)		213 (34.6) (100)			
Total category	47 (7.6) (100)	108 (17.6) (100)	24 (3.9) (100)	189 (30.7) (100)	247 (40.2) (100)	615 (100) (100)
Sub-total	155 (25.2) (100)		213 (34.6) (100)			

TABLE 5 Cause of injury

	Skin tear injury cause n (%)					
	Fall	Collision	Transfer	Other	Unknown	Total
Hospital-acquired	51 (13.6) (30.0)	52 (13.9) (70.3)	14 (3.7) (87.5)	48 (12.8) (63.2)	209 (55.9) (74.6)	374 (100) (60.7)
Community-acquired (POA)	119 (49.2) (70.0)	22 (9.1) (29.7)	2 (0.8) (12.5)	28 (11.6) (36.8)	71 (29.3) (25.4)	242 (100) (39.3)
Total	170 (27.6) (100)	74 (12.0) (100)	16 (2.6) (100)	76 (12.3) (100)	280 (45.5) (100)	616 (100) (100)

3.4 | Wound dressings

Most skin tears were protected with a foam dressing (81.1%, $n = 488$), of which Mepilex Border™ was used most of the time (95.5%, $n = 466$). Foam dressings were used most frequently across all five STAR skin tear categories (range 65.9%–86.3%). A small proportion of wounds was not dressed (6.6%, $n = 41$), of which a third (34.1%, $n = 14$) was category 3. Two wounds (categories 1B, 2B) were found with fixation tape applied only.

4 | DISCUSSION

To our knowledge, this is the first long-term, cross-sectional study of adult skin tear prevalence in an acute hospital setting. The pooled prevalence of 8.9% found in our study is similar but lower than that reported in an earlier 2-year Australian state-wide point-prevalence study across 83 acute care settings (9.5%)¹³ and a single point-prevalence study in a Danish hospital (11.4%).¹⁴ Although our results show a decreasing trend in overall skin tear prevalence, in the main this is because of the fall in hospital-acquired skin tears. The downward trend of hospital-acquired skin tear over 10 years is encouraging, but the pooled prevalence of 5.5% indicates that it is an enduring and significant problem. Although there are no other long-term studies with which to compare our

hospital-acquired results, only one other study has reported hospital-acquired skin tear point prevalence, yielding a similar but higher prevalence of 6.6% in a Singaporean hospital;¹⁸ however, only two medical wards were included in the sample.

In our sample, the mean age of patients with skin tear was 80 years, with 85% aged 70 or above, and most were male (55%). These variables are consistent with the skin tear predictor model developed by Rayner et al²⁰; however, their model was based on an aged care sample. Other predictor variables in their model were histories of skin tear and falls, skin elastosis and purpura. Our results are congruent with other studies showing older age is associated with skin tears.^{3,14,21} While this reflects age-related skin changes,² Australians may also be affected by photoaging, characterised by skin elastosis.^{7,9} In a large, Chinese multi-centre study ($n = 13\ 176$) across nine hospitals, male gender was associated with skin tear incidence (odds ratio [OR] = 1.69, $P = .008$), although older age was not.²² In a Danish hospital point-prevalence study, the mean age of those with skin tear was 85 years, which was significantly higher than those without ($P < .001$).¹⁴ In that study, prevalence was higher in females (14.4%) than males (8.2%), but the difference was not statistically significant. The main predisposing factor associated with skin tear was previous skin tear (OR = 9.3, $P = .001$).¹⁴

In our study, the greatest proportion of skin tears was found in STAR¹⁸ category 3 (no skin flap) (40.1%), with

similar proportions found in both hospital- and community-acquired sub-sets, and there was a notably larger proportion of hospital-acquired STAR category 2B skin tears (33.4%) compared with those community-acquired (26.4%). By comparison, Chang et al¹⁵ reported a similar but higher proportion of STAR category 3 skin tears (43%), while a much greater proportion of ISTAP⁴ category 2 skin tears (72.5%) was found by Bermark et al¹⁴. In stark contrast, within Australian residential aged care settings, only one (3.7%) STAR category 3 skin tear was found, with the majority in STAR categories 1A and 1B (74.0%).⁹ As in other studies,^{14,15,21} we found most skin tears on the limbs, in similar proportions across upper and lower limbs. In the hospital setting, staff education should focus attention on appropriate manual handling and transfer techniques of patients, especially with regard to limb protection of older adults whose frail, thinner skin, is more easily damaged by shear and friction forces.¹⁶ The importance of keeping limbs close to the body when transferring or repositioning should be reinforced, particularly for cognitively impaired and dependent patients, and lower limb protection should be considered for more mobile patients.^{4,16}

Regular skin moisturising has been shown to reduce skin tear incidence^{23,24} and other preventive interventions include the use of anti-embolic stockings and heel protectors,²⁵ protective knee-length socks,²⁶ protective clothing, and non-adherent dressings.¹ However, these may be impractical for some patients. In terms of wound dressings, the findings of our study are encouraging, with most skin tears protected with appropriate dressings according to hospital policy and ISTAP guidelines.⁴ However, consultation with wound management specialists regarding optional wound healing and dressing selection is recommended. In most hospitals, wound management is predominantly nurse-led; specialist wound practitioners and tissue viability nurses play a key role in directing prevention and clinical management of wounds.⁶ Nevertheless, prevention of skin tear in hospital is multidisciplinary, and should include early referral to a dietitian to address nutrition and hydration,³ pharmacist and medical specialist review of medications, polypharmacy and cognition, and physiotherapy or occupational therapy review of mobility.⁴

Most hospital-acquired skin tears in our study were patient-related and accidental because of collisions (13.9%) or falls (13.6%), however the cause was unknown or undocumented in a large proportion (55.9%). In contrast, a much higher proportion (49.2%) of community-acquired skin tears was documented as being caused by falls. In hospital, skin tears occur mostly when vulnerable and frail patients move around their bed area by themselves.^{16,27} Thus, skin tear prevention overlaps with other aspects of preventive care, such as falls prevention. In this context, moderate strength systematic review evidence

indicates that hourly rounding, including assessment of patient position and their nearby possessions, may be effective to prevent falls.²⁷ Similarly, some skin tears may be prevented using this strategy. As well, the importance of the patient's environment should be emphasised. For example, in our hospital, regular "clutter" audits are undertaken to ensure the bed space is free from potential hazards. Use of the ISTAP best practice recommendations for skin tear prevention and treatment in education is important,^{4,28} while online learning programmes have been shown to increase nurses' knowledge of skin tears²⁹ and, at our hospital, use of posters and charts with photos of wounds and risky situations has been successful with other skin integrity and wound prevention education.³⁰ Our past success in decreasing hospital-acquired pressure injury prevalence³⁰ by implementing many education and preventative strategies that are also relevant to skin tear prevention³¹ may be one reason for the decreasing trend in our hospital-acquired skin tear prevalence.

It is recommended that skin tear prevalence be considered as a quality of care outcome measure.⁵ The hospital's focus on improved documentation of skin tear origin (hospital-acquired vs POA) in patient medical records as a measure of care quality may have partly contributed to the decreasing trend in our hospital-acquired skin tear prevalence. However, skin tears are not always well documented. For example, as shown in our study, the cause of skin tear was poorly documented. Although, in part, this may have been because of the injury event being unobserved by staff or the cognitive ability of patients to communicate what happened. Documentation may be improved using electronic incident records at the bedside, with tick boxes or drop-down menus to help with timely information capture.³²

4.1 | Limitations

This study relates specifically to an acute tertiary hospital, which has a strong focus on safety and quality, with a historical emphasis on wound prevention and management. As well, the facility expanded from a cardiothoracic specialty hospital to a general hospital in 2011, with increasing numbers of general medical/surgical and older patients. Thus, our results may not be generalisable to other settings. Furthermore, from 2011 onward, data were collected in mid-late spring (October–November) when the weather is warmer. More skin tears may occur in summer when less protective clothing is worn and skin may become dehydrated.⁵ No specific skin pathology data were collected in our audits, although this is recommended for future audits.^{20,33} Finally, our results are derived from a series of point-prevalence audits, which did not include all

hospitalised patients, as only those that consented to a full skin inspection were included.

5 | CONCLUSION

A 10-year analysis of skin tear point prevalence within an acute general hospital setting has revealed a pooled prevalence of 8.9% with an associated hospital-acquired pooled prevalence of 5.5%. While the downward trend of hospital-acquired skin tear is encouraging, the results indicate that it continues to be a significant cause of patient harm. Health care professionals should remain vigilant to the risk of skin tear, particularly in the older age group, as 85% of skin tears occurred in those aged 70 years and over. Within hospital, the documented cause of most skin tears were collisions or falls, suggesting that combined skin tear and falls prevention strategies may be effective. These should include preventive skin care and nutrition, careful patient transfer, regular patient rounding, and early referral to dietitians and wound care specialists. Use of skin tear prevalence as a measure of care quality is recommended, and the importance of good quality documentation is emphasised.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions.

ORCID

Sandra J. Miles  <https://orcid.org/0000-0003-3490-7383>

Paul Fulbrook  <https://orcid.org/0000-0002-6547-1861>

Damian M. Williams  <https://orcid.org/0000-0003-4353-9180>

REFERENCES

- LeBlanc K, Baranoski S, Holloway S, Langemo D, Regan M. A descriptive cross-sectional international study to explore current practices in the assessment, prevention and treatment of skin tears. *Int Wound J*. 2014;11:424-430. doi:10.1111/iwj.12203
- Serra R, Ielapi N, Barbetta A, de Franciscis S. Skin tears and risk factors assessment: a systematic review on evidence-based medicine. *Int Wound J*. 2017;15(1):38-42. doi:10.1111/iwj.12815
- Munro EL, Hickling D, Williams DM, Bell JJ. Malnutrition is independently associated with skin tears in hospital inpatient setting—findings of a 6-year point prevalence audit. *Int Wound J*. 2018;15(4):527-533. doi:10.1111/iwj.12893
- LeBlanc K, Members of ISTAP and Expert Working Group. Best practice recommendations for the prevention and management of skin tears in aged skin. *Wounds International*. 2018; <https://www.woundsinternational.com/uploads/resources/57c1a5cc8a4771a696b4c17b9e2ae6f1.pdf>
- 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*. 2020;29(7):S16-S22. doi:10.12968/jowc.2020.29.Sup7.S16
- Guest JF, Fuller GW, Vowden P. Cohort study evaluating the burden of wounds to the UK's National Health Service in 2017/2018: update from 2012/2013. *BMJ Open*. 2020;10:e045253. doi:10.1136/bmjopen-2020-045253
- Koyano Y, Nakagami G, Iizaka S, et al. 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*. 2016;13(2):189-197. doi:10.1111/iwj.12251
- Skiveren J, Wahlers B, Bermark S. Prevalence of skin tears in the extremities among elderly residents at a nursing home in Denmark. *J Wound Care*. 2017;26(Sup2):S32-S36. doi:10.12968/jowc.2017.26.Sup2.S32
- Rayner R, Carville K, Leslie G, Dhaliwal SS. Skin tear risks associated with aged care residents: a cross-sectional study. *Wound Pract Res*. 2018;26(3):127-135. doi:10.1111/iwj.12985
- Van Tiggelen H, Van Damme N, Theys S, et al. The prevalence and associated factors of skin tears in Belgian nursing homes: a cross-sectional observational study. *J Tissue Viability*. 2019;28(2):100-106. doi:10.1016/j.jtv.2019.01.003
- Strazzieri-Pulido KC, Peres GR, Campanili TC, Santos VL. Skin tear prevalence and associated factors: a systematic review. *Rev Esc Enferm*. 2015;49(4):668-674. doi:10.1590/S0080-623420150000400019
- McErlean BS. Skin tear prevalence and management at one hospital. *Aust J Wound Manage*. 2004;12(2):83-88. https://www.awma.com.au/files/journal/1202_03.pdf
- Santamaria N, Carville K, Prentice J. Woundswest: identifying the prevalence of wounds within Western Australia's public health system. *EWMA J*. 2009;9(3):13-18.
- Bermark S, Wahlers B, Gerber AL, Philipsen PA, Skiveren J. Prevalence of skin tears in the extremities in inpatients at a hospital in Denmark. *Int Wound J*. 2018;15:212-217. doi:10.1111/iwj.12847
- Chang Y, Carville K, Tay A. The prevalence of skin tears in the acute care setting in Singapore. *Int Wound J*. 2016;13(5):977-983. doi:10.1111/iwj.12572
- LeBlanc K, Baranoski S. Skin tears: state of the science: consensus statements for the prevention, prediction, assessment, and treatment of skin tears. *Adv Skin Wound Care*. 2011;24(9):S2-S15. doi:10.1097/01.ASW.0000405316.99011.95
- Queensland Health. 2011 Queensland Bedside Audit: Statewide Inpatient Report. Brisbane: State of Queensland; 2012.
- Carville K, Lewin G, Newall N, et al. STAR: a consensus for skin tear classification. *Primary Intent*. 2007;15(1):18-21. 24-28.
- International guidelines. *Pressure Ulcer Prevention: Prevalence and Incidence in Context. A consensus document*. London: MEP Ltd; 2009.
- Rayner R, Carville K, Leslie G, Dhaliwal SS. Models for predicting skin tears: a comparison. *Int Wound J*. 2020;17(3):823-830. doi:10.1111/iwj.13340
- Lopez V, Dunk AM, Cubit K, et al. Skin tear prevention and management among patients in the acute aged care and rehabilitation units in the Australian Capital Territory: a best practice implementation project. *Int J Evid-Based Healthc*. 2011;9:429-434. doi:10.1111/j.1744-1609.2011.00234.x

22. Feng H, Wu Y, Su C, Li G, Xu C, Ju C. Skin injury prevalence and incidence in China: a multicentre investigation. *J Wound Care*. 2018;27(Sup10):S4-S9. doi:10.12968/jowc.2018.27.Sup10.S4
23. Carville K, Leslie G, Osseiran-Moisson R, Newall N, Lewin G. The effectiveness of a twice-daily skin-moisturising regimen for reducing the incidence of skin tears. *Int Wound J*. 2014;11(4):446-453. doi:10.1111/iwj.12326
24. Lichterfield-Kottner A, El Genedy M, Lahmann N, Blume-Peytavi U, Büscher A, Kottner J. Maintaining skin integrity in the aged: a systematic review. *Int J Nurs Studies*. 2020;103:103509. doi:10.1016/j.ijnurstu.2019.103509
25. Brimelow RE, Wollin JA. The impact of care practices and health demographics on the prevalence of skin tears and pressure injuries in aged care. *J Clin Nurs*. 2018;27(7-8):1519-1528. doi:10.1111/jocn.14287
26. Powell RJ, Hayward CJ, Snelgrove CL, et al. Pilot parallel randomised controlled trial of protective socks against usual care to reduce skin tears in high risk people: 'STOPCUTS'. *Pilot Feasibility Stud*. 2017;3:43. doi:10.1186/s40814-017-0182-3
27. Mitchell MD, Lavenberg JG, Trotta RL, Umscheid CA. Hourly rounding to improve nursing responsiveness: a systematic review. *J Nurs Admin*. 2014;44(9):462-472. doi:10.1097/NNA.000000000000101
28. Van Tiggelen H, LeBlanc K, Campbell K, et al. Standardizing the classification of skin tears: validity and reliability testing of the International Skin Tear Advisory Panel Classification System in 44 countries. *Br J Dermatol*. 2020;183(1):146-154. doi:10.1111/bjd.18604
29. McTigue T, D'Andrea S, Doyle-Munoz J, Forrester DA. Efficacy of a skin tear education program: improving the knowledge of nurses practicing in acute care settings. *J Wound Ostomy Cont Nurs*. 2004;36(5):486-492. doi:10.1097/WON.0b013e3181b35ebd
30. Miles SJ, Fulbrook P, Nowicki T, Franks C. Decreasing pressure injury prevalence in an Australian general hospital: a ten-year review. *Wound Pract & Res*. 2013;21(4):148-156.
31. Woo K, LeBlanc K. Prevalence of skin tears among frail older adults living in Canadian long-term care facilities. *Int J Palliat Nurs*. 2018;24(6):288-294. doi:10.12968/ijpn.2018.24.6.288
32. Mickan S, Atherton H, Roberts NW, Heneghan C, Tilson JK. Use of handheld computers in clinical practice: a systematic review. *BMC Med Inform Decis Mak*. 2014;14:56. doi:10.1186/1472-6947-14-56
33. Rayner R, Carville K, Leslie G. Defining age-related skin tears: a review. *Wound Pract Res*. 2019;27(30):135-143. doi:10.33235/wpr.27.3.135-143

How to cite this article: Miles SJ, Fulbrook P, Williams DM. Skin tear prevalence in an Australian acute care hospital: A 10-year analysis. *Int Wound J*. 2022;19(6):1418-1427. doi:10.1111/iwj.13735