Managing the Risk of Pressure Ulcers in People with Spinal Cord Injury: A Mixed Methods Study

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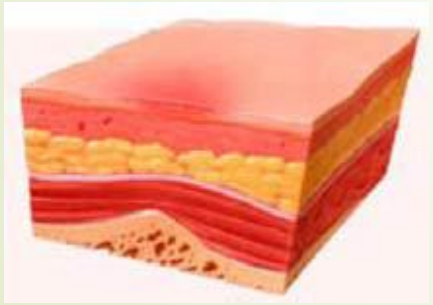
Outline

- *Background*
- *Aims*
- *Methodology*
- *Results/Findings*
- *Conclusion*
- *Recommendations*

Background

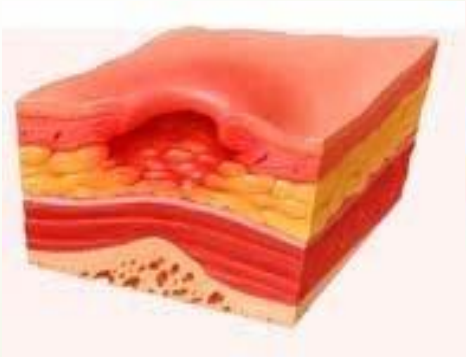
Pressure ulcer

Localized damage to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear. (NPIAP/EPUAP 2019)



Category I

Category II



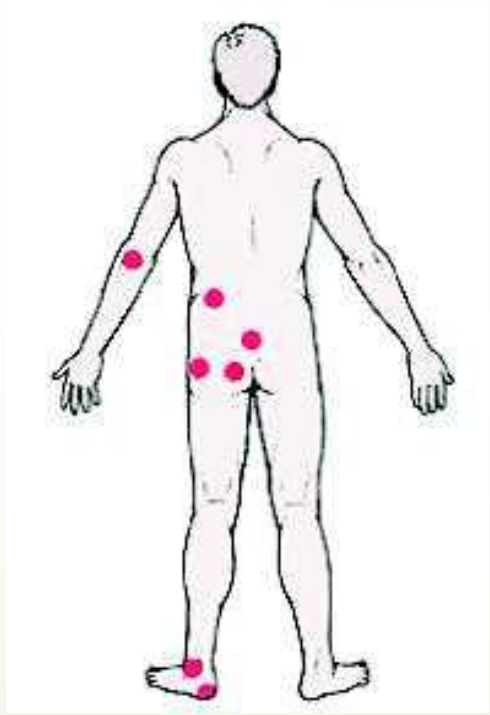
Category III

Category IV

Background

Most common anatomical site for the development of Pressure ulcer in SCI

- *ischial tuberosity (36-50% Mawson et al., 2024)*
- *the sacrum*
- *greater trochanter*
- *the calcaneum*



Background

- PwSCI are permanently exposed to the risks of developing pressure ulcers (PrU);
- Approximately **30–40%** of people with SCI develop PrU during the acute and rehabilitation phases *(Shiferaw 2020; Mathew 2013);*
- Up to **80%** SCI experience at least one PrU during their lifetime (*SIA 2018*);
- **7-8%** of people with a PrU die from related complications (*Richards et al 2004*).

Background

- ***Detrimental personal effects*:**
  - Longer hospitalisation /Delay rehabilitation
  - Anxiety and depression
  - Reduced QoL
  - Fatal infection

- ***Economic impact:***
  - Treating chronic wounds varies from £1,214 to £14,108 with a total annual cost £1.4–£2.1 billion (*Dealey 2012*);

  - Pressure ulcer accounts for approximately 25% of overall treatment costs for people with SCI *(*(Le Fort M 2018).

Background

Prevention approaches:

- Pressure relief device -- specialised cushions
- Education
  - Healthy lifestyle
  - Inspect skin
  - Pressure relief activities
    - Pushing-ups
    - Leaning side-side
    - Leaning forward

Background

- Education regarding skincare for prevention of PrU is provided in hospital following acute SCI;
- Previous studies indicate that individuals with SCI often perform their skincare regimen inconsistently after discharge into the community (*Robineau 2019, King 2012, Shiferaw 2020);*
- PrU incidence remains significantly high amongst this population (*Shiferaw 2020)*.

Overall Aims

To understand how people with SCI **manage their skincare**, and their **attitudes** towards skincare self-management, and how these **factors** affect the incidence of PrU.

Objectives

- To explore the **extent** to which people with SCI comply with skincare self-management;
- To evaluate **knowledge and performance** of skincare self-management for PrU prevention and its impact on PrU incidence;
- To identify any **facilitators to concordance and/or barriers to concordance** with skincare self-management;

Method

- The study was funded by British Skin Foundation (April 2023);
- Local university ethical approval (MDX June 2023);
- HRA/REC approval (Nov 2023);
- The study was registered with the NIHR Central Portfolio Management System (CPMS) (Dec 2023).

Method *cont.*

Inclusion Criteria

- Aged 18 and over yrs. old;
- Wheelchair users with a SCI at any spine level with complete or incomplete lesion;
- Can read English and complete questionnaires.

Exclusion Criteria

- Younger than 18 years old;
- Have difficulties in adequately understanding written or verbal information in English.

Study design

Sequential explanatory mixed method

Ethical considerations

- Information leaflet - Implied consent – online questionnaire via Survey Monkey
- Participants sign consent prior to semi-structured interviews
- No identifying information included in the transcription

Recruitment

Wheelchair users with a SCI from:

- RNOH
- SIA
- ASPIRE

The Health Belief Model (HBM) as framework

Results - Survey

Respondent Demographics and Behavioural Overview

(n = 184)

- **Mean age:** 46.8 ± 13.2 years (range 18 - 65+)
- **Pressure-ulcer history:** **Yes** n = 107 (58%); **No** n = 77 (42%)
- **Prior PrU education:** **Yes** n = 81 (44%); **No** n = 103 (56%)
- **Duration of injury:** Mean 12.7 ± 9.4 years
- **Behavioural means:**
  - Amount of pressure-relief exercise against recommended = 49% ± 28%
  - Skin inspection = 4.2 ± 2.1 days / week

Results: Survey cont.

Attitude toward self-management

- Moderate **Concordance** (3.05 ± 0.79)
- Strong **Perceived Benefit** (4.02 ± 0.62)
- Moderate **Perceived Negatives** (3.12 ± 0.77) and **Practical Barriers** (3.22 ± 0.75)
- **Concordance** negatively correlated with **barriers** ($r = -0.56$) and **negatives** ($r = -0.53$)
- **Perceived Negatives** strongly correlated with barriers ($r = 0.71$, $p < 0.001$)

Results: Survey cont.

Relationship Between Attitudes and Preventive Actions

- Frequent **pressure-relief exercise** significantly associated with:
  - Higher concordance ($r = 0.49$, $p < 0.001$)
  - Fewer barriers ($r = -0.34$, $p < 0.001$)
  - Greater perceived benefit ($r = 0.18$, $p = 0.018$)

- **Skin inspection** frequency not correlated with attitudes reflecting different motivational drivers

Results Survey *cont.*

Influence of Age, Education, and Pressure Ulcer History

- **Age ≥55 years:** performed more frequent skin inspection (5.6 ± 2.3 vs 3.9 ± 2.0 days; p = 0.001)
- **Prior PrU education:** greater pressure-relief (0.58 vs 0.41; p < 0.001) and skin inspection (5.2 vs 3.5 days; p < 0.001)
- **PrU history:** more frequent skin inspection (4.6 vs 3.5 days; p < 0.001)

Findings: Qualitative

6 Themes influencing skincare self-management among PwSCI

PERCEIVED SUSCEPTIBILITY

- Recognition of vulnerability was a catalyst for behaviour change
- *"Before my injury, I had no idea about pressure sores. But when they explained how quickly they develop, it made me really conscious about taking care of my skin."*

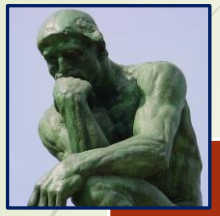
PERCEIVED SEVERITY

- Greater appreciation of PrUs was strongly associated with motivation to adhere to preventive practices
- *"I had one that went so deep, it was down to the bone."*

PERCEIVED BENEFITS

- Consistent preventive behaviours and caregiver involvement are beneficial
- *"I check my skin every morning and before bed. If I see any redness, I take action immediately."*

Findings: Qualitative *cont.*



PERCEIVED BARRIERS

- Barriers led to disengagement from self-care, even when aware of the risks.
- *"Back then, I was so depressed, I didn't care. That's how I ended up losing my toe."*
- *"By the time I realised something was wrong, it was too late."*

CUES TO ACTION

- Triggers played a critical role in building routine behaviours.
- *"I used to be careless, but after my first ulcer, I made sure prevention became second nature."*

SELF-EFFICACY

- Participants with established routines and access to supportive tools expressed confidence in managing their skin health.
- *"Part of my routine now. I do it without thinking."*
- *"Bike and standing frame use to help circulation and prevent sores."*

Conclusion

- Knowledge alone is insufficient to ensure adherence
- Participants with a heightened risk perception and receipt of structured education were more proactive in skincare.
- Psychological and physical barriers significantly hindered self management, while caregiver involvement and structured cues improved adherence.
- Integration of HBM framework highlights how tailored education, support mechanisms and confidence-building are essential to effective PrU prevention.

Recommendations

1. Enhance ongoing support post-discharge.
2. Integrate psychological and behavioural support into rehabilitation pathways to address physical and emotional barriers and build sustainable routines.
3. Develop tailored educational resources for high-risk groups, including men and those with lower levels of formal education.
4. Involve caregivers and family members in structured training as part of the preventive care team.
5. Promote tools that reinforce self-efficacy.

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