

Tracking Changes in Pain Ratings between Admission to Discharge at a Regional Burn Center

Lisa C. Smith, MSN, RN, Iman Khan, MS, MPH, Tomer Lagziel, Carrie Cox, MSN, RN, Julie A. Caffrey, DO, Sheera F. Lerman, PhD

Department of Psychiatry and Behavioral Sciences; Department of Plastic and Reconstructive Surgery, Johns Hopkins University School of Medicine, Baltimore, MD, USA;
Department of Nursing, Johns Hopkins Bayview Medical Center, Baltimore, MD, USA

Introduction

- The complex nature of burn pain has debilitating effects on burn patients' physiological and psychological wellbeing.
- Characterized by its overwhelming intensity and extensive duration, burn pain involves inflammatory and neuropathic components. These pain responses vary in depth, severity, and sensation during and long after the healing process.
- Despite best efforts, treatment of burn pain remains a widespread challenge both in the inpatient and outpatient settings.

Objectives

- Determine changes that may occur in pain ratings between the first 48 hours and last 48 hours of admission to a burn center.
- Understand clinical factors related to changes in pain ratings.

Materials and Methods

- A retrospective chart review was conducted of 442 patients admitted to the Burn Center for treatment of burn injuries between January 2015 and February 2022.
- Data on clinical and demographic factors was extracted electronically and manually from patients' electronic medical records.
- Numerical pain scale ratings documented by nursing were averaged for the first and last 48 hours of patients' hospital stay.
- Linear regression analysis was performed to assess significant predictors of pain prior to discharge.
- Inclusion Criteria:
 - Sustained a burn injury
 - Age ≥ 18
 - Length of stay ≥ 4 days

Results

Table 1: Sample Characteristics, Mean, SD and Range of Study Variables

Variable	Pain first 48	Pain last 48	% TBSA	Age (years)	Length of Stay (days)	Gender
Mean	5.44	4.9	12.87	50.13	22.25	34% female
SD	2.02	2.21	16.38	17.73	38.86	
Range	0-10	0-10	0.5-95	18-95	4-427	

FIGURE 1: MECHANISM OF BURN INJURY

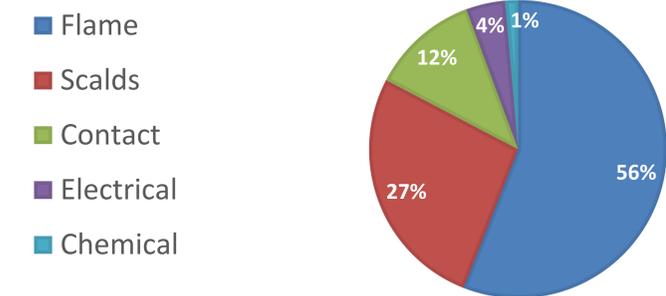


Figure 2:

Change in Pain Ratings between First & Last 48 Hours of Admission

- 22% reported an increase of more than 1 point in their pain
- 42% had no difference in average pain ratings
- 36% reported a decrease of more than 1 point.

% of Patients

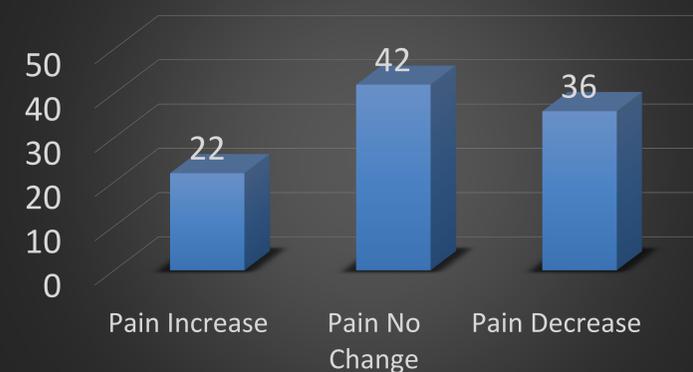


Table 2: Correlations Between Study Variables

Variable	Pain first 48	Pain last 48	TBSA	Age
Pain first 48	1			
Pain last 48	.57*	1		
TBSA	0.12*	-.06	1	
Age	-.27**	-.20**	-.11*	1
Length of stay	0.03	-.07	.53**	-.03

Findings:

- Pain within first 48 hours of admission & age were statistically significant predictors of average pain 48 hours prior to discharge, when controlling for %TBSA, length of stay, gender and psychiatric diagnosis.
- Younger age associated with increased pain ratings.
- 36% reported pain of >6 on last 2 days of admission
- 17% reported pain of >7 on last 2 days of admission

Clinical Implications

- Younger patients and patients with higher initial pain on admission to the burn center should be closely monitored to facilitate early multimodal pain interventions, thereby enhancing their comfort and overall recovery process.
- Early, targeted, evidence-based interventions during inpatient admission and following discharge will allow effective management of pain and potentially reduce the transition to chronic pain.

Conclusion

- Heightened pain is challenging in burn injuries, even prior to hospital discharge, especially for younger patients and those who report initial high levels of pain.
- For many burn survivors, pain remains the same or worsens from admission to discharge, putting them at risk for negative outcomes such as chronic pain, PTSD, suicidality, sleep disturbances, and reduced function.
- Frequent pain assessments and targeted, evidence-based interventions are pivotal in the effective pain management in burn patients.
- Future research is needed to determine if early intervention can serve to mitigate these risks and improve long term recovery and quality of life.

Disclosures

- None to report