

Determining Risk Factors Associated with Development of Depression and PTS Symptoms Following Burn Injury

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Introduction

- Depression and post-traumatic stress (PTS) symptoms are common following burn injury.
- A tool to risk stratify the likelihood of development of these symptoms does not exist.
- This study aims to examine the demographic and clinical factors known at admission that are associated with depression or PTS symptoms at 12 months post-injury.
- This data will be used to develop a depression and PTS risk scoring system.

Methods

- Data from the Burn Model System National Database (2015-2019) were analyzed.
- Evidence-based cutoff values for the PROMIS-29 depression scale (>60) and the Patient Civilian Checklist (>50) were used to identify clinically significant levels of depression and PTS symptoms at 12 months post-injury.
- Multivariate logistic regression analyses were used to identify predictors known at admission of depression or PTS symptoms. Multiple imputation was used to address missing data.
- A point system for determining the risk of developing depression or PTS symptoms at 12 months was calculated using the identified predictors and modeled after the Framingham Heart Study methodology.

Results

Table 1. Demographic and clinical characteristics of study population

Variable	No Depression and/or PTS (n=285)	Depression and/or PTS (n=103)*
Age, mean (SD)	47.4 (16.3)	44.1 (14.0)
Male, n (%)	208 (73.0)	57 (55.3)*
White, n (%)	221 (81.0)	79 (77.5)
Not Hispanic, n (%)	230 (82.7)	82 (80.4)
Burn size, mean % (SD)	16.6 (18.4)	23.2 (22.4)*
Graft size, mean % (SD)	10.8 (16.6)	18.2 (22.2)*
Head/Neck burn, n (%)	161 (56.5)	41 (40.2)*
Head/Neck graft, n (%)	260 (91.2)	77 (75.5)*
Working pre-injury, n (%)	195 (73.0)	63 (66.3)
Inhalation Injury, n (%)	31 (10.9)	22 (21.8)*
Etiology of injury, n (%)		
Fire/flame	153 (54.1)	60 (58.3)
Electrical	15 (5.3)	11 (10.7)
Other	115 (40.6)	32 (31.1)
Suspected self-inflicted injury, n (%)	8 (2.8)	11 (10.8)*

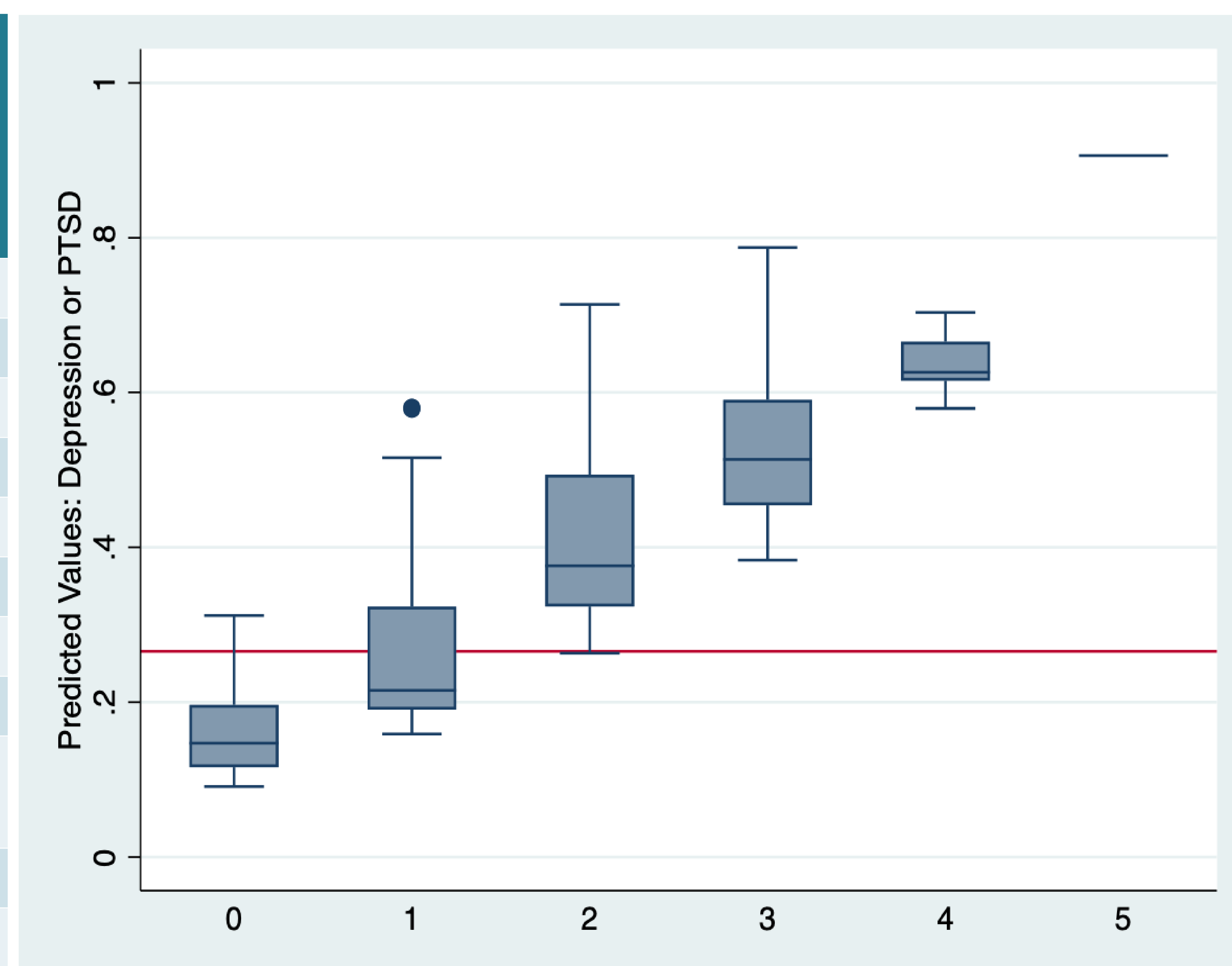
*indicates statistically significant difference (p<0.05)

Table 2. Admission scoring system for assessing depression or PTS symptoms

Predictor	Points
Female	1
Total Body Surface Area Grafted	
31-60%	1
>60%	2
Psychiatric treatment in year prior to injury	1
Head/neck graft	1
Electrical injury etiology	2
High School education or below	1

Points are added to produce final risk score. C-statistic of regression model used to create risk score was 0.731. Calibration plots were well-fit.

Figure 1. Risk at admission of developing depression or PTS symptoms by risk score



The x-axis is each possible point sum. The bar in the middle of each box represents the median predicted risk, and the top and bottom of the box are the 75th and 25th percentiles of the distribution, respectively. The whiskers cover 1.5 times the difference between the 25th and 75th percentiles.

Conclusions

An eight-point scoring system to stratify the risk of development of depression or PTS symptoms at time of admission was created.

This scoring systems will aid in identification of those at high risk of depression and PTS and will facilitate appropriate utilization of resources and potential treatment prophylaxis.