

Pressure Injury Risk Associated with Level of Paralysis in Persons with Spinal Cord Injury: Analysis of the National Spinal Cord Injury Database

DonnaLee Pollack¹, Linda Cowan², Jessica Smith¹, Kamal Awad^{1, 3}, Marco Brotto^{1,3}

¹University of Texas at Arlington (UTA) College of Nursing and Health Innovation, ²James A. Haley Veterans Hospital, Tampa, FL, ³UTA Bone-Muscle Research Center, Arlington, Texas

Introduction

- Over 17,900 persons with new SCI per year in United States (U.S.); 296,000 individuals living with Spinal Cord Injury (SCI) in U.S.; 42,000 individuals are U.S. Veterans
- Pressure Injuries (PI) are 2nd leading cause of hospitalization for persons with SCI
- Approximately 95% of persons with SCI report at least one PI since injury
- Mortality rate: 1.8% without PI vs. 9.1% with PU
- National Spinal Cord Injury Database (NSCID) established in 1975. Includes data from more than 28,000 individuals with SCI in US and is largest SCI database in the world
- Investigating strongest predictors of PI in SCI population is warranted to target effective interventions

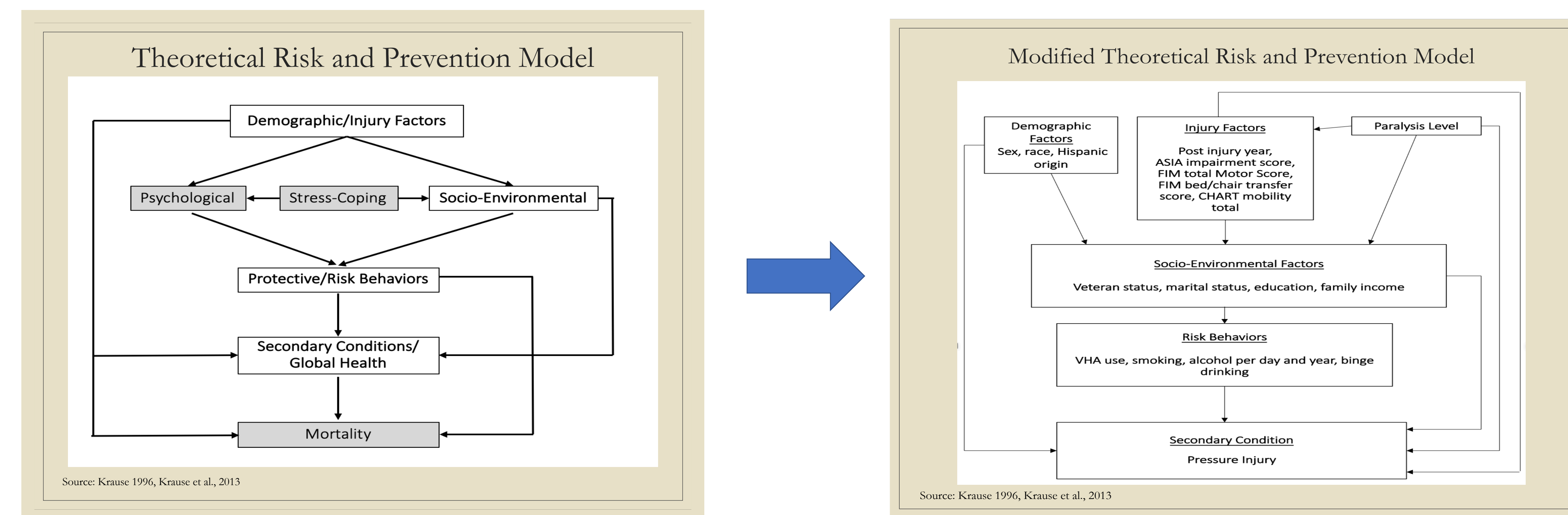
Research Questions

- What is association between known PI risk factors and presence of PI, stratified by level of paralysis, in persons with traumatic SCI whose data is maintained by NSCID?
- What is association between known PI risk factors and level of paralysis in persons with a traumatic SCI whose data is maintained by NSCID?

Methods

- N = 10,668
- Retrospective secondary analysis of 2011-2016 NSCID dataset; IRB at UTA verified no approval needed for open-source de-identified data set
- Modified Krause Theoretical Risk and Prevention Model as a conceptual model to guide project
- Number, percentage, Chi Square and Mann Whitney U used for descriptive statistics.
- Number, percentage and Odds Ratio used to determine associations between PU risk factors and level of paralysis.

Conceptual Model



Results

Persons with paraplegia were 8% more likely to report pressure injuries than persons with tetraplegia, OR=1.08, 95% CI (1.04, 1.13)

Persons with paraplegia with PI in past 12 months: 30.9%; Persons with Tetraplegia with PI in past 12 months: 27.7% (p<.001); Strongest PI Predictive Factors = 17; Subfactors = 77 (PI Subfactors for paraplegia level of paralysis (LOP)= 65 vs PU Subfactors for tetraplegia LOP = 12)

Top 10 PI Risk Factors in persons with Paraplegia > Tetraplegia

FIM bed to chair transfer: Independent	OR=3.54, 95% CI (2.84, 4.41)
FIM Motor Total 73-91	OR=3.37, 95% CI (2.86, 3.99)
FIM bed to chair transfer: Max assistance	OR=2.62, 95% CI (1.46, 4.71)
FIM bed to chair transfer: Mod. Independence	OR=2.39, 95% CI (2.01, 2.85)
FIM Motor Total 53-72	OR=2.35, 95% CI (1.87, 2.95)
FIM Motor Total 33-52	OR=1.96, 95% CI (1.49, 2.57)
Veteran Use of VA services in past 5 years	OR=1.93, 95% CI (1.33, 2.80)
Smoking everyday	OR=1.88, 95% CI (1.51, 2.34)
FIM bed to chair transfer: Moderate Assistance	OR=1.87, 95% CI (1.08, 3.23)
FIM bed to chair transfer: Total assistance	OR=1.85, 95% CI (1.36, 2.53)

FIM: Functional Independence Measure
FIM Motor Total: Higher score = more independence

Discussion

Study Limitations:

- Self-reporting of some variables
- May not be able to generalize to a larger SCI population
- Did not address PI prevention practices or interventions used or not used

Conclusion and Implications for Nursing

- This study confirmed findings of Cowan et. al (2019) who found higher prevalence of PI in persons with paraplegia than persons with tetraplegia (secondary data analysis of the 2012 U.S. Minimum Data Set of Long-Term Care facilities).
- This study leads to additional questions related to what factors could be influencing increased PI risk in persons with paraplegia. (e.g. Time in chair? More active and independent for mobility and personal care? Persons with tetraplegia more dependent on skilled caregivers? Bone muscle crosstalk?)
- Education for persons with paraplegia should include strategies to address higher risk for PI such as custom seating.
- Research is warranted to identify unique challenges to persons with paraplegia vs. tetraplegia and implications for nursing (e.g. personalized interventions specific to level of paralysis).

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