

Δ Patient Coping and Expectations About Recovery Predict Development of Chronic Post-Surgical Pain Pain Interference and Reduced Quality of Life After Traumatic Open Extremity Fracture

Jason Busse, DC, PhD, Assistant Professor¹; Sun Makosso-Kallyth, PhD¹;

Brad Petrisor, MD²; Kyle Jeray, MD³; Ted Tufescu, MD⁴; Georges-Yves Laflamme, MD, FRCSC⁵;

Paula McKay, BSc¹; Randi McCabe, PhD, MA¹; Yannick Le Manach, MD, MSc, PhD¹;

Mohit Bhandari, MD, FRCSC, PhD⁶; FLOW Investigators

¹McMaster University, Ontario, CANADA;

²Hamilton General Hospital, Ontario, CANADA;

³Greenville Health System University Medical Center, Greenville, South Carolina, USA;

⁴University of Manitoba, Manitoba, CANADA;

⁵Université de Montréal, Hôpital du Sacré-Cœur de Montréal, Quebec, CANADA;

⁶MacOrtho Research, Ontario, CANADA

Purpose: Within the orthopaedic community, there has been an increasing interest in the role that psychological factors, including patients' beliefs and attitudes regarding their medical condition, play in their recovery from severe physical trauma. The purpose of this study is to explore the role of patients' beliefs regarding their recovery on persistent pain, quality of life, and pain interference after traumatic open extremity fracture.

Methods: We previously developed and validated an instrument designed to capture the impact of patients' beliefs on functional recovery from injury; the Somatic Pre-occupation and Coping (SPOC) questionnaire. At both 1 and 6 weeks after surgical fixation, we administered the SPOC questionnaire to a separate population of 1360 patients with operatively managed open extremity fractures. We constructed multivariable regression models to explore the association between SPOC scores and pain and functional outcome at 1 year, as measured by the Short Form-12 (SF-12) and the EuroQol-5D.

Results: Of 1111 open fracture patients with data available for analysis, 725 (65%) reported pain at 1 year. Addition of SPOC scores to an adjusted regression model to predict persistent pain improved the c-statistic from 0.66 to 0.73 ($P < 0.001$ for the difference) and found the greatest risk was associated with high (≥ 78) SPOC scores (OR [odds ratio] 5.29, 95% CI 3.75-7.46). 36% (406) reported pain interference at 1 year. Addition of SPOC scores to an adjusted regression model to predict pain interference improved the c-statistic from 0.66 to 0.74 ($P < 0.001$ for the difference) and found the greatest risk was associated with high SPOC scores (OR 5.83, 95% CI 4.12-8.26). In our adjusted multivariable regression models, SPOC scores at 6 weeks postsurgery accounted for 11% of the variation in SF-12 physical component summary scores and 13% of SF-12 mental component summary scores at 1 year. All associations were conserved with 1-week SPOC scores, but the magnitude of associations for SPOC scores at 6 weeks was significantly larger across all models.

Conclusion: Patients' coping and expectations of recovery, as measured by the SPOC questionnaire, is a strong predictor of persistent pain, quality of life, and pain interference after traumatic open extremity fracture. Future studies should explore whether these beliefs can be modified, and if doing so improves prognosis.

Δ OTA Grant

See pages 49 - 106 for financial disclosure information.