Editorial

Studying depression following spinal cord injury: Evidence, policy and practice

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From its initial applications in the social sciences to its subsequent adoption in medical science, meta-analysis is typically associated with evaluations of studies of specific interventions for a particular clinical condition or phenomenon. It is an excellent, systematic method to evaluate evidence resulting from an array of small and under-powered studies to obtain an objective index of the magnitude of an effect while improving overall statistical power. As illustrated in the work by Kraft and Dorstyn (this issue) meta-analysis can also be used to determine the magnitude of the relationships that may exist between specific variables across quantitative studies of a particular research problem.

Meta-analysis relies heavily on the quality of the studies under investigation. Most recommended guidelines for and criticisms of meta-analytic procedures emphasize the need for methodological rigor and reporting. Consistent with best practice, Kraft and Dorstyn present clear inclusion and exclusion criteria and report important details to help us interpret their findings. The quality of the studies evaluated varied considerably and twenty studies were found with overlapping samples, necessitating an adjustment by the authors to minimize a potentially disproportionate influence in calculating effect sizes. As the authors note a degree of overlap is expected in studies that emanate from the Model Systems database and it is likely present in other ongoing, archived databases. The degree to which samples overlap on any measured variable is valuable information that will be germane to future meta-analytic studies involving data routinely collected by the Model Systems. Although the Model Systems maintains a repository of published papers at National Spinal Cord Injury Database website (https://www.nscisc.uab.edu/nscisc-database.aspx), it may be worthwhile to consider additional details about the samples used in each study to assist future inquiries about overlap.

Meta-analysis of specific variables is best applied when guided by theoretical models of relationships that may exist between variables. Ideally, theoretical models guide a priori tests of predicted relationships and they are essential for isolating potential mechanisms that may be targeted in clinical interventions. They are essential in interpreting relationships. For example, depression is often comorbid with anxiety and it compromises quality of life. Consequently, the magnitude of the associations between depression and life satisfaction, worry and anxiety are not particularly compelling. The strong associations found between depression and ‘…affective feelings, and thoughts and beliefs specific to SCI’ are consistent with cognitive-behavioral models of adjustment, generally, and provide further support for their use in conceptualizing adjustment and developing interventions.

Theoretical models also guide advanced techniques like path analytic and structural equation modeling (SEM) and latent growth mixture modeling to test hypothesized relationships between and among variables. With the limitations of their approach Kraft and Dorstyn excluded studies that featured SEM. This should not discourage the use of these sophisticated procedures: Indeed, more studies using SEM (and other contemporary techniques, such as hierarchical linear modeling) are recommended to further our understanding of the contextual relationships between and among variables that occur over time in predicting outcomes in a manner that informs our policy and practice.

One of the most important, contemporary studies of psychosocial adjustment following spinal cord injury nicely demonstrates how theory can make meaningful predictions for behavior and outcomes with practical implications. In an a priori test of a popular model of resilience (and one that was excluded from the Kraft and Dorstyn research) using latent growth mixture

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modeling, Bonanno and colleagues found over 10% of their European sample reported chronically high levels of depressive symptomology – from the first assessment within six weeks of injury onset to the assessment conducted two years post-injury – and an additional 9.8% of the sample reported clinically elevated levels of depressive symptomology at one year post-injury that persisted over the following year. These data reveal that clinically elevated levels of depression observed during the inpatient program can persist for years among a significant percentage of patients, and others who report clinical levels of depressive symptoms at the first annual evaluation may also experience a chronic, persistent course. These findings provide further evidence that assessing depressive symptoms in the inpatient setting and in outpatient visits with reliable, valid instruments is critical in identifying those who have problems with this treatable condition.

Good systematic literature reviews and meta-analytic studies can stimulate changes in policy and clinical practice. Despite the many empirical studies of depression following SCI – its measurement, correlates and recurrent recommendations for improved assessment there is an odd disconnect between this enterprise and the use of a single item to assess pre-injury depression during inpatient rehabilitation by the SCI Model Systems: 'Has a health professional told you that you have depression?' (https://www.nscisc.uab.edu/PublicDocuments/nscisc_database/Forms.pdf). This measure would not satisfy the ‘Kalpakjian’s criteria’ imposed in the Kraft and Dorstyn work. The two-item version of the PHQ-9 is subsequently used at the first annual evaluation (and then in five year intervals), but these lack specificity and the original nine-item version demonstrates good sensitivity and specificity among persons with SCI. It seems that the weight of the best evidence to date would have prompted a more sophisticated, knowledge-based assessment of depression. Similarly, the largest provider of SCI rehabilitation and care in the United States, the Department of Veterans Affairs, does not have a nationwide standardized approach to depression assessment during annual psychosocial evaluations or inpatient rehabilitation.

Perhaps the disconnect between our ‘best research’ and current ‘best practice’ reflects a concern that available and effective treatments for depression following SCI are lacking. Fortunately, preliminary work suggests many patients with SCI will consider some form of depression post-SCI and there is sufficient evidence supporting the use of cognitive-behavioral interventions, specifically. Importantly, the first multisite randomized clinical trial of an antidepressant therapy (Venlafaxine XR) for depression among patients with SCI provides critical insights into the potential benefits and possible limitations of this approach.

The success of any intervention for depression post-SCI is contingent upon the information obtained in comprehensive, valid and empirically-supported assessments of the correlates, comorbidities, and modifiable risk factors that appear in the Kraft and Dorstyn study and others that do not (e.g. specific type of pain experienced, self-management skills). This kind of information is essential to the chronic disease management perspective that is now influencing the way traumatic brain injury is construed by the TBI Model Systems How much more evidence is required to persuade our best systems of SCI care to implement routine and standard use of comprehensive, efficient, valid and reliable measures of depression, comorbidities and its correlates?

References