

ORIGINAL ARTICLE

An Exploration of Modifiable Risk Factors for Depression After Spinal Cord Injury: Which Factors Should We Target?

Charles H. Bombardier, PhD, Jesse R. Fann, MD, Denise G. Tate, PhD, J. Scott Richards, PhD, Catherine S. Wilson, PsyD, Ann Marie Warren, PhD, Nancy R. Temkin, PhD, Allen W. Heinemann, PhD, for the PRISMS Investigators

ABSTRACT. Bombardier CH, Fann JR, Tate DG, Richards JS, Wilson CS, Warren AM, Temkin NR, Heinemann AW, for the PRISMS Investigators. An exploration of modifiable risk factors for depression after spinal cord injury: which factors should we target? *Arch Phys Med Rehabil* 2012;93:775-81.

Objective: To identify modifiable risk factors for depression in people with spinal cord injury (SCI).

Design: Cross-sectional survey.

Setting: Outpatient and community settings.

Participants: Community-residing people with SCI (N=244; 77% men, 61% white; mean age, 43.1y; 43% with tetraplegia) who were at least 1 month postinjury.

Interventions: Not applicable.

Main Outcome Measures: Depression severity (Patient Health Questionnaire-9 [PHQ-9]), physical activity (International Physical Activity Questionnaire [IPAQ]), pleasant and rewarding activities (Environment Rewards Observation Scale [EROS]), and self-efficacy to manage the effects of SCI (Modified Lorig Chronic Disease Self-Management Scale).

Results: Greater depression severity was associated with being 20 to 29 years of age, not completing high school, not working or attending school, and being ≤ 4 years post-SCI. After controlling for demographic and injury characteristics (adjusted $R^2=.13$), lower EROS scores (change in adjusted $R^2=.34$) and lower self-efficacy (change in $R^2=.13$) were independent predictors of higher PHQ-9 scores. Contrary to predictions, physical activity as measured by the IPAQ did not predict depression severity.

Conclusions: Our findings suggest that having fewer rewarding activities, and to a lesser extent, having less confidence in one's ability to manage the effects of SCI are independent predictors of greater depression severity after SCI. Interventions

such as behavior activation, designed to increase rewarding activities, may represent an especially promising approach to treating depression in this population.

Key Words: Depression; Rehabilitation; Risk factors; Spinal cord injuries.

© 2012 by the American Congress of Rehabilitation Medicine

APPROXIMATELY 25% TO 30% of people with spinal cord injury (SCI) living in the community experience significant depressive symptoms. The risk of significant depressive symptoms among people with SCI is thought to be greater than among able-bodied control subjects.¹ Nevertheless, there has been limited theoretical work on why people with SCI are at greater risk of depression. We know that simple explanations based on the overall magnitude of physical losses are not sufficient because large-scale studies have indicated that injury level and injury severity are unrelated to depressive symptoms.^{2,3} Our lack of knowledge about theoretical risk factors likely contributes to the fact that work on effective treatments for depression after SCI lags far behind our knowledge about the prevalence and adverse impact of depression in this population. The existing depression intervention research has been criticized for its lack of theoretical grounding and scientific rigor.⁴ A better understanding of modifiable risk factors for depression in people with SCI could lead to the development of more effective interventions to treat these symptoms.

While the literature is replete with studies on correlates of depression after SCI,^{5,6} few studies have examined theoretically derived modifiable risk factors. Moreover, we are not aware of any studies that examined several risk factors simultaneously to determine which variable was most strongly related to depression. Therefore, the aim of this study was to determine which of several potential risk factors were related to depression severity. We reasoned that identifying the modifiable risk factor(s) that are most strongly correlated with depression in this population might represent a promising approach to selecting among various evidence-based treatment alternatives. We examined behavioral, cognitive, and physical activity-related risks for depression because each of these factors can be linked to distinct depression treatment approaches.

From a behavioral perspective, depression after SCI can be attributed to a loss of reinforcing activities.⁷ In people with SCI, there is some evidence that a dearth of meaningful social

From the Departments of Rehabilitation Medicine (Bombardier, Fann, Temkin), Psychiatry and Behavioral Sciences and Epidemiology (Fann), and Neurological Surgery and Biostatistics (Temkin), University of Washington, Seattle, WA; Department of Physical Medicine and Rehabilitation, University of Michigan, Ann Arbor, MI (Tate); Department of Physical Medicine and Rehabilitation, University of Alabama at Birmingham, Birmingham, AL (Richards); Northwestern University, Chicago, IL, and James A. Haley Veterans' Hospital, Tampa, FL (Wilson); Division of Trauma, Baylor University Medical Center, Dallas, TX (Warren); and Feinberg School of Medicine, Northwestern University and the Rehabilitation Institute of Chicago, Chicago, IL (Heinemann).

Presented as a poster to the American Psychological Association, February 26, 2011, Jacksonville, FL.

Supported by the National Institute on Disability and Rehabilitation Research (grant nos. H133A060107, H133N060033, H133N110002).

No commercial party having a direct financial interest in the results of the research supporting this article has or will confer a benefit on the authors or on any organization with which the authors are associated.

Clinical Trial Registration No.: NCT00592384.

Correspondence to Charles H. Bombardier, PhD, Dept of Rehabilitation Medicine, Box 359612, Harborview Medical Center, 325 9th Ave, Seattle, WA 98104, e-mail: chb@uw.edu. Reprints are not available from the author.

In-press corrected proof published online on Mar 22, 2012, at www.archives-pmr.org.

0003-9993/12/9305-0125\$36.00/0

doi:10.1016/j.apmr.2011.12.020

List of Abbreviations

EROS	Environmental Rewards Observation Scale
IPAQ	International Physical Activity Questionnaire
MET	metabolic equivalents of task
PHQ-9	Patient Health Questionnaire-9
SCI	spinal cord injury

activities⁸ and less ability to participate in social relationships⁹ are associated with depression. Therefore, we selected a recently developed measure of environmental rewards to examine as a potential correlate of depression in this population.¹⁰ If the experience of environmental rewards is strongly and inversely associated with depression severity, interventions such as behavior activation may represent a particularly promising approach to treating depression after SCI.

Through the lens of social cognitive theory, self-efficacy has been viewed as a modifiable characteristic that can buffer the person against becoming depressed in the presence of serious life stressors.¹¹ Therefore, we hypothesized that depression could be related to low self-efficacy beliefs among people with SCI. Prior research in people with SCI has documented a relationship between depression and low self-efficacy,^{12,13} as well as related concepts such as loss of control over one's life,¹⁴ poor problem-solving ability,¹⁵ less physical independence, and less financial independence.⁹ Researchers have speculated that improvement in self-efficacy may have mediated the positive effects of coping effectiveness training on depression in SCI.¹⁶ Measures of self-efficacy to manage chronic health conditions have been developed within the self-management literature¹⁷ and can be easily adapted to managing SCI. If self-efficacy to manage the effects of SCI is closely related to depression, this would suggest that self-management interventions¹⁸ or coping effectiveness training^{16,19} may be attractive depression treatment approaches for individuals with SCI.

A physical activity model of depression links higher rates of depression to low levels of physical activity and higher levels of sedentary behavior.²⁰ People with SCI are among the most physically sedentary groups that have been studied.^{21,22} Low levels of physical activity have been linked to higher levels of depression in the general population²³ as well as in people with SCI.^{24,25} To the extent that low physical activity is correlated with more severe depression, interventions that promote physical activity may represent an effective means of improving depression in people with SCI.

In summary, we hypothesized that a lack of environmental rewards, low self-efficacy beliefs, and low physical activity would be associated with greater depression severity in people with SCI. In addition, we sought to identify the risk factor most closely associated with depression severity by comparing the bivariate and multivariate relationships of each risk factor to depression severity in this sample.

METHODS

Procedures

Participants were recruited from outpatient SCI clinics, enrollees in Spinal Cord Injury Model Systems follow-up studies, and other sources. Recruitment and data collection were conducted between November 9, 2009, and July 2, 2010. Each study site obtained approval from its local institutional review board, and all participants gave informed consent.

Participants

Study inclusion criteria were as follows: age of 18 years or older with a history of traumatic SCI at any level and severity. We excluded individuals who were non-English speakers, too cognitively impaired to comprehend study materials, and those referred to study personnel by clinical staff who believed the person was depressed rather than screened on a nonselected basis. The final sample comprised 244 participants with traumatic SCI who provided complete data on the dependent vari-

able (depression severity) and the 3 risk factor variables. Table 1 shows the contributions each site made to the total sample.

Materials

Data for this cross-sectional study were collected via structured interviews that were conducted in person or by telephone. Injury characteristics were based on self-report and included time since SCI, injury level, injury severity, and etiology of injury.

Depression severity. The Patient Health Questionnaire-9 (PHQ-9) is a depression measure based on the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* criteria for major depressive disorder.²⁶ Items are rated, based on their occurrence during the past 2 weeks, from 0 (not occurring at all) to 3 (occurring nearly every day). The PHQ-9 has good internal consistency (Cronbach $\alpha=.87$) and construct validity.^{2,27} We used the total score (range, 0–27) to describe depression severity, and a score of 10 or more to indicate probable major depression.²⁶ The PHQ-9 has been used extensively in SCI samples^{2,26,28–30} and has been validated for telephone administration.^{31,32}

Physical activity. The short, past 7 days version of the International Physical Activity Questionnaire (IPAQ)³³ was used to measure low, moderate, and vigorous physical activity, expressed in metabolic equivalents of task (MET). The measure captures lifestyle physical activity as well as leisure, exercise, or sport activities. The IPAQ was chosen because it is one of the most widely used measures of its kind in the world. It can be administered reliably by telephone and has been used and validated in multinational studies.³³ The IPAQ is supported by exceptionally thorough guidance on standardized administration procedures, data scoring procedures, and norms. Total MET minutes per week were calculated using the on-line published protocol, including standard truncation and missing data rules (<http://www.ipaq.ki.se/scoring.htm>). In addition, we defined persons as falling into low, moderate, or high levels of physical activity according to the published scoring protocol.³⁴

For the purposes of this study, the IPAQ was modified to include activities appropriate for wheelchair users. We included examples of wheelchair-based activities that represented vigorous-intensity (eg, wheelchair racing, off-road pushing, wheelchair basketball, hard arm-cranking, or fast hand-cycling) and moderate-intensity (eg, wheeling or pushing for pleasure, moderate arm-cranking, hand cycling at a regular pace) physical activity based on other measures of SCI-specific physical activity.³⁵ To the IPAQ question about time spent walking, we added "wheeling."

Pleasant and rewarding activities. The Environmental Rewards Observation Scale (EROS),¹⁰ which assesses environmental reward and response-contingent positive reinforcement, is a 10-item scale measuring agreement (strongly agree, 4; to strongly disagree, 1) with statements having to do with experiencing pleasure, enjoyment, or fulfillment from activities, experiences, or hobbies. Half the items are reverse scored. The measure has strong internal consistency and unidimensionality, good test-retest reliability, convergent and discriminant validity, and ecologic validity.¹⁰ For example, EROS scores significantly predict time spent in low-reward and high-reward behaviors above and beyond that predicted by depression scores. Scores range from 10 to 40, with higher scores indicating increased environmental reward.

Self-efficacy to manage SCI. We chose the 6-item Lorig Chronic Disease Self-Efficacy Scale¹⁷ over alternatives such as the SCI-specific Moorong Self-Efficacy Scale³⁶ for its brevity, widespread use, and because it measures confidence in one's ability to manage pain, fatigue, and emotional distress, as well

Download English Version:

<https://daneshyari.com/en/article/3450166>

Download Persian Version:

<https://daneshyari.com/article/3450166>

[Daneshyari.com](https://daneshyari.com)