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ORIGINAL RESEARCH

Prospective Study of the Occurrence of Psychological Disorders and Comorbidities After Spinal Cord Injury

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Abstract

Objective: To conduct a prospective study of the occurrence of psychological disorders and comorbidities after spinal cord injury (SCI), determine psychotropic medication usage, and establish predictors of psychological disorders after transition to the community.

Design: Longitudinal design with multiple measures.

Setting: Assessment occurred in SCI units and the community.

Participants: Adults with SCI (N=88) admitted over a period of 32 months into 3 SCI units.

Interventions: Participants completed inpatient rehabilitation for an acute SCI. Longitudinal assessment occurred up to 6 months postdischarge.

Main Outcome Measures: Measures were chosen that had a theoretical and clinical foundation for contributing to recovery after SCI. The Mini International Neuropsychiatric Interview, a structured diagnostic psychiatric interview, was conducted to determine the presence of psychological disorders. Medical measures included severity of secondary conditions or complications. Psychological measures included measures of anxiety and depressive mood, resilience, pain catastrophization, self-efficacy, and cognitive capacity.

Results: Rates of psychological disorders of 17% to 25% were substantially higher than rates found in the Australian community. The occurrence of psychological disorder comorbidities was also very high. Anxiety was significantly elevated in those with a psychological disorder. Psychotropic medications were prescribed to more than 36% of the sample, with most being antidepressants. Factors predictive of psychological disorders included years of education, premorbid psychiatric/psychological treatment, cognitive impairment, secondary complications, resilience, and anxiety.

Conclusions: SCI can have a substantial negative impact on mental health that does not change up to 6 months postdischarge. Findings suggest a substantial minority experience increased psychosocial distress after the injury and after transitioning into the community. Additional resources should be invested in improving the mental health of adults with SCI.

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Injury is a primary cause of the global burden of disease and is associated with high rates of morbidity and mortality.[1] Chronic spinal cord injury (SCI) can be debilitating and involves ongoing medical and ancillary treatment.[2] It results in a loss of sensation and paralysis, impacting the functioning of multiple body systems.[3] Secondary conditions such as chronic pain and infection challenge quality of life.[3,4]

Psychological morbidity is associated with SCI.[5-17] A systematic review[5] of 18 studies conducted before 2009 that investigated rates of depressive mood after SCI concluded that rates of probable depression were approximately 30% in both the short-term and long-term. More recent studies[6,8,10,11,17] suggest that rates of probable depression range from 18% to 37%, while a recent meta-analysis[17] concluded that rates of probable

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depression range between 18.7% and 26.3% with a mean prevalence estimate of 22.2%. Longitudinal research up to 2 years postinjury suggests that almost 30% of persons with SCI have clinically elevated levels of anxiety.[9,13] Rates of probable posttraumatic stress disorder (PTSD) are estimated to range between 14% and 40%[12-15]; however, estimated rates in some studies are inflated because the samples included U.S. war veterans with SCI.[15] Rates of chronic fatigue are estimated to range from 30% to 50%.[16,18] The rate of alcohol abuse is estimated to be 14%, while the rate of those abusing illicit drugs or prescription medicines is estimated at 11%.[19]

Most studies investigating mental health in adults with SCI have focused on rates of probable depression.[17] Measures used have mostly been psychometric screens[6,8,10]; however, the use of structured diagnostic psychiatric interviews in addition to validated screens is accepted as best practice.[7,20,21] Furthermore, the use of screens alone is problematic because SCI symptoms such as weight gain or loss or sleep disturbance may inflate test scores, resulting in false-positive detection results.[11] Therefore, to estimate rates of psychological disorders after SCI, this study used structured psychiatric interviews in addition to psychometric screens. The reporting of psychological disorder comorbidities in people with SCI is uncommon, with existing studies showing a high co-occurrence of anxiety disorders with depressive mood.[8,9] Two studies involving veterans with SCI found very high psychological comorbidities in addition to depressive disorders, especially PTSD[22] and substance abuse disorders.[23] Furthermore, given the high co-occurrence of alcohol abuse and psychological disorders found in veterans with SCI and the general community,[23,24] it was believed important to confirm the co-occurrence of psychological disorders and alcohol/substance abuse in the general SCI community by using longitudinal research.[23] The rate of psychotropic medication usage by people with SCI is underreported, with 1 cross-sectional study[8] finding almost 30% of people with SCI living in the community were receiving antidepressant medication. It was therefore believed important to evaluate psychotropic medication usage in newly injured adults with SCI and determine its relationship to the presence of psychological disorders.

There has been an ongoing search for factors that predict risk of psychological disorders after SCI.[5,8-11] In their search for factors related to psychological disorders, most studies have used cross-sectional designs, which render them unable to determine factors that are predictive of psychological disorders. A recent cross-sectional study[11] performed by the authors examined the contribution of demographic (eg, age, education), injury (eg, level of injury), medical (eg, physical health), and psychosocial (self-efficacy, social support, anxiety, pain) variables to depressive mood in adults with SCI. Factors found to be associated with depressive mood included self-efficacy, fatigue, anxiety, pain, and social functioning. No demographic or injury variables significantly contributed. To determine significant predictors of psychological disorder, we decided to perform a further multivariate analysis using prospective data of a range of variables investigated in prior studies,[4-11] including demographic, injury, medical, and psychosocial variables. Variables selected for the analysis were also guided by an exhaustive review of factors influencing outcomes after SCI, conducted by the New South Wales State Spinal Cord Injury Service.[25,26]

A major aim of this article was to determine the rates of psychological disorders and comorbidities after admission to SCI rehabilitation, and after transitioning into the community after discharge. A further aim was to determine the rates of prescribed psychotropic medications. Given that the development of psychological disorders is complex and involves multiple factors,[11] the final aim involved determining factors that are predictive of psychological disorders.

List of abbreviations:

HADS	**Hospital Anxiety and Depression Scale**
MSES	**Moorong Self-Efficacy Scale**
NUCOG	**Neuropsychiatry Unit Cognitive Assessment Tool**
PTSD	**posttraumatic stress disorder**
SCI	**spinal cord injury**
SCS	**Secondary Conditions Scale**

Methods

Participants

Inclusion criteria for the study consisted of (1) the presence of an acute SCI; (2) a recent first-time admission to an SCI unit; (3) aged 18 to 80 years at the time of interview; (4) sufficient cognitive capacity to complete the questionnaires; and (5) English speaking. Exclusion criteria included the presence of severe traumatic brain injury that rendered the person unable to participate at the time of the interview and severe cases of a psychiatric disorder that prevented the person from participating (eg, florid schizophrenia or bipolar disorder with severe manic episodes). Participants with SCI were assessed longitudinally for the occurrence of psychological disorders and comorbidities, and included 91 adults with acute SCI who met inclusion and exclusion criteria and who agreed to participate in the study. In addition to these 91 participants, a further 170 individuals were admitted to the 3 SCI units in Sydney, Australia, over the 32 months of the study (April 2010 to December 2012). Of the 170, 10 had a moderate to severe traumatic brain injury, 17 were too old to participate, 66 were not in the rehabilitation unit long enough to participate in the study, 10 were showing symptoms of severe schizophrenia or bipolar disorder and were unsuitable for the study, 5 had a history of multiple suicide attempts and deemed unsuitable for the study, and 2 had dementia. The remaining 60 did not consent to participate for a number of reasons, including not being well at the time of interview because of serious disease (eg, hepatitis C, cancer), not being interested, too busy with conflicting rehabilitation tasks at the time of the interview, or not speaking sufficient English to understand the questionnaires. These 60 were not significantly different in mean age, sex ratio, or length of stay in the rehabilitation unit when compared with the study participants; however, the percentage of people with paraplegia was marginally higher (67% compared with 54% in the study sample). Of the 91 participants, 1 died soon after admission to the study, and 2 chose not continue in the study, resulting in 88 participants.

Demographic and injury characteristics of the 88 participants are shown in table 1. Completeness of the lesion was assessed by a medical specialist based on the International Standards for Neurological Classification of SCI (http://ais.emsci.org/). All participants received standard medical and psychosocial rehabilitation that was similar across the SCI units. Full compliance with the Code of Ethics of the World Medical Association occurred, and research ethics approval was granted by the local institutional human research ethics committee. Written consent was obtained