ORIGINAL ARTICLE

Depression After Spinal Cord Injury: Comorbidities, Mental Health Service Use, and Adequacy of Treatment

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ABSTRACT. Fann JR, Bombardier CH, Richards JS, Tate DG, Wilson CS, Temkin N, for the PRISMS Investigators. Depression after spinal cord injury: comorbidities, mental health service use, and adequacy of treatment. Arch Phys Med Rehabil 2011;92:352-60.

Objective: To provide data for depression rates and psychiatric comorbid conditions, mental health service use, and adequacy of depression treatment in depressed and nondepressed adults with spinal cord injury (SCI).

Design: Cross-sectional survey as part of the Project to Improve Symptoms and Mood after SCI (PRISMS).

Setting: Community setting.

Participants: Community-residing people with traumatic SCI (N=947).

Interventions: Not applicable.

Main Outcome Measures: Patient Health Questionnaire-9 (PHQ-9) Depression Scale, psychiatric history questionnaire, Cornell Service Index (mental health service use), and current medication use.

Results: The prevalence of probable major depression (PHQ-9 score ≥10) was 23%. There was a high lifetime prevalence of other psychiatric conditions, particularly anxiety disorders. In depressed participants, 29% currently were receiving any antidepressant and 11% were receiving guideline-level antidepressant dose and duration, whereas 11% had been receiving any psychotherapy in the past 3 months and 6% had been receiving guideline-level psychotherapy in the past 3 months. Serotonergic antidepressants and individual psychotherapy were the most common types of treatment received, and there was a wide range of provider types and treatment settings. Demographic and clinical variables were not associated with receipt of mental health service or guideline-level care.

Conclusions: Findings from this study document the low rate of mental health treatment for persons with SCI and probable major depression. These findings have implications for improving the effectiveness of depression treatment in people with SCI.

Key Words: Depression; Health services; Psychiatry; Rehabilitation; Spinal cord injuries.

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DEPRESSION IS ONE OF the most well-studied psychological conditions associated with SCI.[1,2] Nevertheless, there are important gaps in our knowledge about SCI-related depression and how to manage it. The point prevalence of major depression in studies using diagnostic interviews ranged from 9.8% to 37.5%.[3] Similar prevalence rates emerged from depression screening studies of people undergoing SCI rehabilitation (20%–43%) and community-residing people (11%–60%).[2] In comparison, the 1-year prevalence of MDD was 6.7% in the U.S. population.[4]

Depression was associated with longer rehabilitation lengths of stay and fewer functional improvements,[5] as well as less functional independence and mobility at discharge.[6] In addition, depression was associated with greater pressure ulcer occurrence,[7] poorer self-appraised health,[3] more days in bed and greater use of paid personal care,[8] and poorer role functioning.[9] Probable major depression predicted all-cause mortality after SCI.[10]

In primary care patients, the presence of comorbid psychiatric conditions was associated with poorer depression outcomes.[11] Anxiety was one of the most common and disabling comorbid conditions associated with depression,[12] yet we know little about the comorbidity of anxiety and depression in persons with SCI.

Despite the prevalence and adverse impact of depression, relatively little research has been published about the treatment of SCI-related depression.[13] The clinical practice guideline for depression treatment in people with SCI published in 1998[14] promoted medical and psychotherapeutic treatment that paralleled depression treatment in the general population. To our knowledge, no study has examined the extent to which depres-

List of Abbreviations

CI	confidence interval
DSM-IV	*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*
MDD	major depressive disorder
OR	odds ratio
PHQ-9	Patient Health Questionnaire-9
SCI	spinal cord injury

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sion treatment in people with SCI conforms to standard treatment guidelines. The available data suggest that SCI-related depression treatment may be suboptimal. In usual-care conditions, people with SCI remain depressed over extended periods.[15,16]

To optimize depression treatment in people with SCI, it is important to understand the current standard of care. In this descriptive study, we assessed depression, psychiatric comorbidity, and details of pharmacotherapy or psychotherapy use in depressed and nondepressed community-residing persons with SCI at 4 geographic locations in the country. We compared treatment received with established clinical practice guidelines for depression.[14,17,18] Finally, we examined personal and clinical characteristics that may be associated with the level of mental health service use in this population.

METHODS

Participants

Participants (N=947) were recruited from 4 National Institute on Disability and Rehabilitation Research–funded SCI Model System sites as part of the Project to Improve Symptom and Mood after SCI (PRISMS): 380 from the Rehabilitation Institute of Chicago; 210 from the University of Washington, Seattle; 192 from the University of Michigan, Ann Arbor; and 165 from the University of Alabama, Birmingham. Participants were recruited from unselected persons attending outpatient SCI clinics (n=330; 34.8%), enrollees in SCI Model System follow-up studies (n=506; 53.4%), other sources (n=72; 7.6%), and unknown sources (n=39; 4.1%). Recruitment and data collection were conducted between July 2007 and January 2009. Study inclusion criteria were age of 18 years or older with a history of traumatic SCI at any level and severity. We excluded persons who were non–English speakers, too cognitively impaired to comprehend study materials, and referred to study personnel by clinical staff who believed the person was depressed, rather than screened on a nonselected basis. All participants gave informed consent, and each site obtained approval from its local institutional review board.

Materials

Data for this cross-sectional study were collected by means of in-person (35%) and telephone-based (54%) structured interviews (mode not recorded in 11% of cases). Injury characteristics were based on self-report and included time since SCI, injury level (tetraplegia or paraplegia), and cause of injury.

Depression. The PHQ-9 Depression Scale is a screening measure based on DSM-IV criteria for MDD.[19] Items are rated as occurring not at all (0) to nearly every day (3) during the past 2 weeks. The PHQ-9 has good internal consistency (Cronbach α=.87) and construct validity.[3,20] We used the standard total score (range, 0–27) cutoff value of 10 or higher to define "depressed," which is the optimal cutoff for identifying independently diagnosed MDD (sensitivity, .88; specificity, .88) in primary care patients.[19] As an added sensitivity analysis, we also defined MDD more stringently based on DSM-IV criteria as follows: at least 5 symptoms endorsed "more than half the days" (suicidal ideation could be "several days"), provided at least 1 is a "cardinal symptom" (anhedonia or depressed mood). The sensitivity and specificity of these criteria are .73 and .98, respectively.[19] The PHQ-9 has been used extensively in medical and rehabilitation populations[21-24] and has been validated for telephone administration.[25-27]

Functional impairment. The PHQ-9 includes a question about how difficult any depressive symptoms have made it for the subject to work, take care of things at home, or get along with other people on a scale ranging from 1 (not at all) to 4 (extremely difficult).

Subjective health. The 1-item General Health Scale from the Medical Outcomes Study 36-Item Short-Form Health Survey[28] was used as an indicator of overall subjective health, with scores ranging from 1 (excellent) to 5 (poor). It has been highly predictive of health-related quality of life, accounting for a significant portion of the variance in the Medical Outcomes Study 36-Item Short-Form Health Survey.[29]

Current medications. Participants reported all their current medications, including over-the-counter, herbal-remedy, and investigational drugs. Only data for antidepressant medications were reported here.

Psychiatric history. Subjects were asked whether depression, bipolar disorder or manic depression, panic disorder, generalized anxiety disorder, posttraumatic stress disorder, obsessive compulsive disorder, any specific or social phobias, schizophrenia, schizoaffective disorder, or any other psychotic disorder had ever been diagnosed and/or treated.

Mental health treatment. Participants were asked whether they currently were receiving medications, counseling, or electroconvulsive therapy for each of the specific psychiatric conditions they endorsed. The standardized interview-based Cornell Service Index[30] was used to quantify any mental health service use in the past 3 months, including type of visit, type of provider, site of service, and frequency of visits.

Practice guidelines for initial antidepressant treatment recommend administration at a therapeutic dose for at least 6 weeks.[14,17,18] For psychotherapy for depression, at least 4 sessions of an evidence-based form of psychotherapy, such as cognitive behavioral therapy or problem-solving treatment, generally is considered a minimally adequate dose.[31,32] This standard is liberal compared with evidence from clinical trials that time-limited depression psychotherapy effectiveness may require up to 8 sessions.[17,33]

Statistical Analyses

For comparison between depressed and nondepressed groups, we used Fisher exact tests for categorical variables, and *t* tests, for continuous variables. We used Mann-Whitney tests to compare group differences in suicide attempts and frequency of mental health service use. Nominal *P* values are presented, but the Bonferroni-corrected significance level is given in footnotes to tables. When there were missing data, percentages were calculated from available data. To examine which variables could be associated with mental health use and receipt of guideline-level treatment in depressed participants, ORs and *P* values were calculated using exact logistic regression. (LogXact, version 4.1[a])[34]. The variables examined included demographic, SCI, psychiatric, functional, and general health-related variables.

RESULTS

The study sample included 947 persons with SCI. Demographic and clinical characteristics of this sample were similar to the SCI Model System sample[35] (table 1). Less education and unemployment were associated significantly with higher rates of probable major depression.

As listed in table 2, 23% of the total sample endorsed at least moderate depression (PHQ-9 score $\geq$10), with 9% endorsing moderately severe or severe depression (PHQ-9 score $\geq$15). Suicidal ideation was endorsed by 15% of the sample.

There was a high lifetime prevalence of psychiatric diagnoses or treatment in the currently depressed group, with 60%

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