Depression and Depression Treatment in Women With Spinal Cord Injury

Susan Robinson-Whelen, PhD,¹⁻⁴ Heather B. Taylor, PhD,^{1,2,5}
Rosemary B. Hughes, PhD,⁶ Lisa Wenzel, MD,^{2,4} and Margaret A. Nosek, PhD^{3,4}

¹Spinal Cord Injury and Disability Research Center, ²The Institute of Rehabilitation and Research Memorial Hermann, Houston, Texas; ³Center for Research on Women with Disabilities, ⁴Department of Physical Medicine and Rehabilitation, Baylor College of Medicine, Houston, Texas; ⁵Department of Pediatrics, University of Texas Health Science Center at Houston, Houston, Texas; ⁶The Rural Institute on Disabilities, University of Montana, Missoula, Montana

Background: Research has documented high rates of depression in people with spinal cord injury (SCI); however, most SCI research is conducted with predominantly male study participants. Additional research is needed on depression and depression treatment among women with SCI. **Objective:** Study objectives were to examine depression, correlates of depression, and depression treatment in a sample of women with SCI. **Methods:** The sample included 51 ethnically and racially diverse women with SCI who participated in a larger study on secondary conditions of women with diverse physical disabilities. Recruited through health clinics and community organizations in a large metropolitan area, participants completed structured interviews that included demographic and disability characteristics and measures of health and health care utilization. **Results:** Scores on the Beck Depression Inventory-II (BDI-II) indicated that 41% of the women had depressive symptomatology in the mild to severe range. BDI-II scores were significantly related to more severe secondary conditions, greater pain, and poorer health perceptions but not to demographic or disability variables. Nearly a third ($n = 16$) of the women had scores exceeding the standard cutoff for significant clinical depressive symptomatology, yet only 5 of those had received any treatment for depression in the past 3 months and only 1 had received counseling or psychotherapy. Lifelong depression treatment showed a similar pattern of predominantly pharmacologic treatment. **Conclusion:** Depression is a common problem for women with SCI, and many do not receive treatment, particularly psychological treatment. Disability-sensitive and affordable depression treatment must be made available to women with SCI. **Key words:** depression, depression treatment, spinal cord injury, women

There is a large body of literature documenting the high prevalence of depression, psychological distress, and psychological morbidity after spinal cord injury (SCI).¹⁻⁶ In a recent study of community-residing people with traumatic SCI, the rate of probable major depression was found to be 3 times that of the general population.³ Women represent about 19% of people with SCI⁷; therefore, most research on psychosocial health after SCI has been based on samples consisting predominantly of men with SCI. There is very little research examining rates of depression or severity of depressive symptoms specifically in women with SCI or comparing rates and severity of depression by gender. As a result, recent reviews on psychological health after SCI have been completely silent with regard to gender differences.^{1,6} Early studies seemed to confirm

assumptions drawn from the literature on the general population that rates of depression were higher among women with SCI^{5,8}; however, more recent findings have been mixed, with some studies reporting greater depression and poorer mental health among women^{3,9-11} and others finding no differences between men and women.^{12,13}

Although the prevalence of depression after SCI has received a great deal of attention in the literature, a number of researchers have argued that more research needs to be directed toward the development and evaluation of effective depression treatments for people with SCI.^{2-6,14,15} There is little known about the treatment that people with SCI receive for depression. Noting this lack of research about treatment, particularly the application of standard treatment guidelines for depression among people with SCI,¹⁶ Fann

---

Corresponding author: Susan Robinson-Whelen, Spinal Cord Injury and Disability Research Center, TIRR-Memorial Hermann, 1333 Moursund Avenue, Houston, TX 77030; phone: 713-797-5981; e-mail: susanrw@bcm.edu

---

Top Spinal Cord Inj Rehabil 2014;20(1):23-31
© 2014 Thomas Land Publishers, Inc.
www.thomasland.com

doi: 10.1310/sci2001-23

and colleagues³ examined depression treatment utilization of people with SCI. They found low rates of mental health treatment for people with SCI who had probable major depression. Among those classified as depressed in their sample, only 29% were receiving antidepressant medication and far fewer were receiving medication at an appropriate guideline-level dosage and duration. Only 11% had received any psychotherapy for depression in the past 3 months, and only half of these had received appropriate guideline-level psychotherapy in the past 3 months. To our knowledge, this is the only study in the literature examining and documenting lower rates of depression treatment among people with SCI. Gender and gender differences received little attention in the article, but an examination of the tables revealed that a higher percentage of women than men had elevated depression scores. The authors did note that results not included in the article revealed a trend toward women receiving more guideline-level treatment than men. No such gender differences were noted with regard to whether participants received any treatment for depression.

Given the paucity of data on depression treatment among women with SCI, the purpose of this study was to examine depression and its treatment in a sample of women with SCI. Using a self-report interview survey, the study examined depressive symptomatology and recent as well as lifetime treatment for depression. In addition, demographic, disability, and health-related variables were examined as potential correlates of depression in an effort to identify important factors for clinicians to consider in screening for and treating depression in women with SCI.

Methods

Sample

The sample consisted of 51 women with SCI from a larger study on the cost of secondary conditions of women with diverse physical disabilities. The sample was recruited through public and private clinics and community organizations in a large metropolitan area. Women were eligible to participate in the study if they were at least 18 years

of age, spoke either English or Spanish, and self-identified as having a diagnosis, for at least 1 year, of a physical disability or health condition that limited one or more major life activities. Women were excluded from the study if they reported suicidal intentions, were currently abusing alcohol or other drugs, had no telephone at which they could be reached, or did not live in or planned to move from the metropolitan area within the next 12 months. The larger study consisted of bimonthly telephone interviews conducted over the course of a year; however, the data reported here represent time 1 data only. To be included in the subsample of women included in the current analyses, participants were required to identify SCI as their primary disability.

The sample was diverse in terms of age, race/ethnicity, and education (see **Table 1**), although the majority of the women were unemployed and most were not married. There was a wide range in income; however, the median personal and household incomes were quite low. There were more women in the sample with paraplegia than tetraplegia, and most of the women had been living with their disability for more than a decade (mean [*SD*] disability duration = 12.64 [12.71] years; range, 1-42 years).

Measures

Data were collected by means of a survey questionnaire that was administered in a structured interview. The survey included demographic, disability, and health-related information; a measure of depressive symptoms; and questions pertaining to recent and lifetime treatment for depression. Basic demographic information, including age, race/ethnicity, marital status, educational level, employment status, and personal and household income was collected as part of the survey. The survey also included questions pertaining to participants' SCI, including age at onset, disability duration, level of injury, and functional limitations, as measured by the 10-item Physical Function subscale of the Medical Outcomes Study Short Form-36 Health Survey (SF-36).¹⁷ The SF-36 Physical Function subscale consists of 10 items on which participants rate the extent to which they are limited (a lot, a little, or

Table 1. Sample characteristics and relation between characteristics and BDI-II scores ($N = 51$)

Variable	Mean (SD) or n (%)	r , t , or F (relation to BDI-II)	P value
Age	46.59 (12.65)	$r = .01$	.921
Years of education		$F = 0.96$	.390
Less than high school degree	4 (7.8%)		
Completed high school or GED	9 (17.6%)		
Some post high school	26 (51.0%)		
College or graduate degree	12 (23.5%)		
Race/ethnicity		$t = -1.18$	.245
White, non-Hispanic	23 (45.1%)		
Hispanic	4 (7.8%)		
African-American	20 (39.2%)		
Other	4 (7.8%)		
Married	18 (35.3%)	$t = 2.18$	.034
Personal income ^a	\$8,520 ^b	$r = -.01$	.937
Household income ^a	\$14,000 ^b	$r = .05$	.773
Employment status		$t = 0.05$	.963
Full-time	5 (9.8%)		
Part-time	3 (5.9%)		
Not employed	43 (84.3%)		
Level of injury		$t^c = -0.93$	.356
Paraplegia	3 (64.7%)		
Tetraplegia	13 (25.5%)		
Did not report	5 (9.8%)		
Disability duration (in years)	12.64 (12.71)	$r = -.19$	.177
Mean age of onset	33.98 (14.02)	$r = .16$	.246
SF-36 Physical Function Scale	12.25 (17.30)	$r = -.07$	.633
SF-36 General Health Scale	52.90 (25.81)	$r = -.50$	.000
SF-36 Bodily Pain Scale	47.14 (28.30)	$r = -.29$	.040
Health Conditions Checklist	23.04 (12.73)	$r = .31$	.028

Note: BDI-II = Beck Depression Inventory, 2nd ed.; SF-36 = Medical Outcomes Study Short Form-36 Health Survey.

^a Personal income was reported by 38 and household income was reported by 31 participants.

^b Median rather than mean income is presented due to the skewed distribution of this variable.

^c Analysis conducted only on the 46 on whom level of injury data were available.

not at all) in their ability to engage in the activity in question. Examples of items include lifting or carrying groceries and climbing one flight of stairs. Scores are transformed to range from 0 to 100, with lower scores reflecting greater physical limitations.

Health-related measures included in the survey consisted of measures of general health perceptions, bodily pain, and secondary health conditions. The General Health subscale of the SF-36 was used to assess general health perceptions. This subscale consists of 5 items asking participants to rate, on

a 5-point response scale, their health in general (excellent to poor) and their agreement (definitely true to definitely false) with 4 additional statements about their overall health, their health compared to others they know, and their expectations that their health will get worse. The SF-36 Bodily Pain subscale, which consists of 2 items assessing how much bodily pain respondents have had during the past 4 weeks and how much their pain interfered with their normal work, was used to assess pain experience. Scores on both SF-36 subscales were

coded and transformed according to scoring instructions¹⁸ such that scores range from 0 to 100, with higher scores representing better health and less pain.

The Health Conditions Checklist (HCC), a gender-sensitive adaptation of an earlier secondary conditions measure,¹⁹ was used to assess the number and severity of secondary health conditions commonly experienced by people with physical disabilities. Respondents were asked to rate each of 42 health conditions on a scale of 0 to 3 (0 = *not a problem in the previous 2 months*, 1 = *a mild or infrequent problem*, 2 = *a moderate or occasional problem*, and 3 = *a significant or chronic problem*) or indicate that they had never had this condition. Scores were summed to assess the cumulative severity of secondary conditions. Although depression is 1 of the 42 conditions included in the HCC, it was excluded from the HCC severity score in this study; thus, HCC severity scores, based on the 41 remaining items, could range from 0 to 123.

Symptoms of depression were assessed using the Beck Depression Inventory–Second Edition (BDI-II).²⁰ The BDI-II is a self-report screening measure consisting of 21 items assessing depression severity. Each item consists of a list of 4 statements arranged in increasing severity about a specific symptom of depression experienced over the past 2 weeks. Scores on individual items range from 0 to 3, with total scores ranging from 0 to 63. The symptom content of the BDI-II corresponds to the diagnostic criteria for major depressive disorder as generated by the *Diagnostic and Statistical Manual of Mental Disorders*.²¹ Beck and colleagues²⁰ have suggested the following cut scores and interpretive labels to characterize scores on the BDI-II: minimal (0-13), mild (14-19), moderate (20-28), and severe (29-63) depression. They also recommended that a cut point of 17 or greater be used to identify research samples with clinically significant depressive symptomatology.

Finally, participants were asked if they had ever received treatment for depression. If they had, they were asked to indicate if they had received outpatient psychotherapy or counseling, had received medication, or had been hospitalized for depression. Participants were then asked if they

had received any treatment for depression within the past 3 months. Those who indicated they had received treatment within the past 3 months were asked if they were currently receiving medication for depression and if they were currently receiving psychotherapy or counseling for depression.

Planned statistical analyses

Descriptive statistics were calculated to summarize the severity of depressive symptoms, the number and percentage of women reporting depression scores exceeding standard cut points on the BDI-II, and the number and percentage reporting lifetime and recent treatment for depression. To examine the relation between BDI-II scores and continuous demographic, disability, and health-related variables, Pearson correlations were calculated. For categorical variables, *t* tests and analysis of variance (ANOVA) were conducted. Given the relatively small sample of women with SCI, several demographic and disability-related variables were collapsed for these analyses. Marital status, employment status, and race/ethnicity were all represented by dichotomous variables reflecting those who were married or were in a marriage-like relationship versus those who were not, those employed versus those unemployed, and those who were White non-Hispanic versus all other racial and ethnic groups combined, respectively. Level of education was collapsed into 3 groups (completed high school and completed less than high school combined, completed some education post high school, and completed college degree or additional postcollege education). Because personal and household incomes were significantly skewed, these data were transformed ($\log_{10}$) prior to examining the relation between income and BDI-II scores.

Results

The mean (*SD*) score on the BDI-II in this sample of women with SCI was 12.02 (9.59). Although the majority of women did not have depression scores indicative of a major depressive disorder, more than 40% ($n = 21$) of the women in the sample had scores in the mildly depressed range or higher, with nearly a quarter ($n = 12$) scoring in the moderately or severely depressed range (see **Table 2**).

Table 2. Level and classification of depression based on scores on the BDI-II ($N = 51$)

Level	BDI-II scores	Frequency	%
Minimal	0-13	30	58.8
Mild	14-19	9	17.6
Moderate	20-28	8	15.7
Severe	29-63	4	7.8
Classification			
Nondepressed	0-16	35	68.6
Depressed	17-63	16	31.4

Note: BDI-II = Beck Depression Inventory, 2nd ed.

In the current sample of women with SCI, 16 women (31%) exceeded the cut point of 17 that has been recommended for use when screening for clinically significant depressive symptomatology. However, only 5 of these women reported receiving treatment for depression within the past 3 months. All 5 receiving treatment reported pharmacologic treatment for depression; only one woman reported receiving counseling or psychotherapy.

When the full sample of 51 women with SCI was asked about lifetime treatment of depression, a similar pattern was observed. Nearly 40% of the women ($n = 20$) reported receiving some treatment for depression during their lifetime; however, the majority of the women reporting any lifetime treatment ($n = 13$; 65%) indicated that they had received only pharmacologic treatment. About a third of those women ($n = 7$; 35%) reported having received both pharmacologic treatment and psychotherapy/counseling in their lifetimes. None of the women in this sample reported having ever received inpatient treatment for depression.

A final objective of this article was to examine correlates of depression to support researchers and clinicians in their efforts to (a) identify women with SCI who are at risk for depression and (b) develop effective interventions for depression that address the unique needs of women with SCI. As noted previously, we examined the relation between BDI-II scores and available demographic, disability, and health-related variables using Pearson correlations, t tests, and ANOVAs. BDI-II

depression scores were significantly related to marital status, such that women who were not married had significantly lower BDI-II depression scores than women who were married or in a marriage-like relationship [$M (SD) = 9.94 (8.66)$ vs $15.83 (10.27)$, for nonmarried and married women, respectively]. No other demographic variables were significantly related to BDI-II scores (see **Table 1**). Similarly, no disability variables were significantly related to depression, including level of injury, age of injury, disability duration, and physical function. Depression scores were more strongly related to the 3 health-related variables (secondary conditions, bodily pain, and general health perceptions) than the demographic and disability-related variables. Results indicated that more secondary conditions, greater pain, and poorer health perceptions were related to greater depressive symptomatology. After applying a Bonferroni correction to reduce the likelihood of Type I errors by adjusting the critical P value for each individual significance test (required P value = .0036), only the SF-36 General Health subscale was statistically significant.

Discussion

Depression scores of the women with SCI participating in this study, on average, were elevated, with nearly a third of the women's scores exceeding the standard cutoff for significant depressive symptomatology on the BDI-II. The

average BDI-II score of 12.02 (*SD* 9.59) found in this community-based sample of women with SCI was notably and significantly higher than mean (*SD*) scores reported for young adult women [9.08 (8.26); $t(196) = 2.10, P = .04$] and older adult women [8.07 (6.99); $t(134) = 2.77, P = .006$] from a sample of community-dwelling research participants.²² Of serious concern was the finding that most of the women with elevated BDI-II scores were not receiving any treatment for depression. Less than a third had received any treatment for depression in the past 3 months, and such treatment was almost exclusively pharmacologic treatment. The examination of the lifetime history of depression treatment resulted in similar findings, with most depression treatment limited to medication.

These results suggest the need for health care providers to be more proactive in assessing and treating depression in women with SCI. Although most women with SCI may not experience significant depressive symptoms, a sizeable number of women do experience clinically significant depression, and our data suggest that they do not receive adequate treatment. A recent study using a large national dataset of community adults 18 years old or older living in the United States²³ revealed that most respondents with a mood disorder had not seen a professional within the previous 12 months. Although the percentage of people seeking and obtaining treatment appears similar to our findings on the surface (37.8% with major depression and 44.5% with dysthymia had received some professional help), the percentages in the national survey varied greatly by gender. Women, particularly middle-aged women, were far more likely to have seen a professional and received some treatment, with treatment rates estimated at 74.4% and 74.9% for women with major depression and dysthymia, respectively. Other studies have similarly found that treatment rates for depression are significantly higher for women than men.²⁴ Given that our sample consisted only of women, the treatment rates reported in this study are strikingly low.

A recent study of women receiving chemotherapy for breast cancer²⁵ revealed that 66.7% of the women in that study who were experiencing clinically significant depression had received

evidence-based treatment for depression (defined as antidepressant medication or psychotherapy from a psychiatrist or psychologist) within the past 3 months. In stark contrast to our findings, the majority of the women in that study were receiving individual psychotherapy or a combination of individual psychotherapy and pharmacotherapy. Given the literature documenting that a combination of medication and psychotherapy provides the most efficacious treatment,²⁶ the small percentage of women with SCI receiving psychotherapy or counseling for depression suggests that most depressed women with SCI may not be receiving the full complement of treatment they need.

There are likely many reasons for the inadequate treatment of depressive symptoms in our sample of women with SCI. First, depression may not be adequately recognized or diagnosed. Factors that may contribute to underdetection and underdiagnosis include a failure to recognize common secondary conditions, such as fatigue and sleep disturbance, as symptoms of depression. Such symptoms, which are commonly experienced by people with SCI, can mask an underlying mood disorder. Underdiagnosis can also result from an expectation of patients, families, and health care professionals that depression is an expected or understandable response to SCI. In addition, the occurrence of serious medical concerns, issues, and complications may result in health care providers prioritizing pressing medical complications and failing to diagnosis and address psychological health issues. The very low participation in psychotherapy found in this study may be related to the tremendous barriers people with SCI experience in accessing health care services. Due to disparities in employment, people with SCI may lack the financial resources and insurance coverage to access psychotherapy services. In addition, there may not be mental health care providers available who have expertise or who are informed about depression in the context of disability. Finally, transportation and environmental barriers can make it difficult or impossible for people with SCI to access services. Although stigma and a reluctance to acknowledge depression can be a barrier to receiving health care services, research

suggests that such stigma is more prevalent among men than women.²⁷ The extent to which the factors noted above contribute to underdiagnosis and undertreatment of mental health disorders among men and women with SCI are not well understood. Additional research is needed to better understand factors contributing to undertreatment, especially given recent findings indicating that depression not only affects quality of life but also increases risk of health conditions such as cardiovascular disease, stroke, and diabetes.²⁸

The results of this study contribute to our understanding of who may be at higher risk of experiencing depressive symptoms. An examination of the correlates of depressive symptoms in this sample suggests that the greatest risk factors for depression among women with SCI are health related. Although only general health was significantly related to depression scores after applying a Bonferroni correction, this procedure has been criticized for dramatically increasing the likelihood of Type II errors,²⁹ especially when applied to smaller samples. It is important to point out that the strength of the correlation between depression scores and pain ($r = -.29$) and secondary health conditions ($r = .31$) indicates a moderate effect size or a moderate relation between depression and these 2 health-related variables.³⁰ Using those same guidelines,²⁹ the correlation between depression score and general health ($r = .5$) indicates a strong relation. Women who reported poorer health perceptions and more severe secondary health conditions, including pain, had higher depression scores. It may be particularly important for health care providers to consider and screen for depression among their patients who are experiencing pain and poor health, a group for which differentiating somatic symptoms of depression from poor health and disability can be especially challenging.

The fact that disability-related variables, including severity of limitations and level of injury, were not related to depression scores is consistent with a recent literature review on psychosocial issues in SCI.⁶ We found that women with SCI who were married or in marriage-like relationships had higher depression scores on average than women who were not in a marriage-like relationship. This finding runs counter to findings in the general

population.³¹ Although caution is advised in drawing conclusions from such a small sample, this finding corroborates recent studies suggesting that marriage does not necessarily enhance quality of life in the first 6 months of injury³² or well-being in women³³ after SCI.

There are a number of limitations to this study, including the small sample size and the limited information available on the nature and extent of depression treatment. In addition, the cross-sectional nature of the data makes it impossible to examine or determine causality. Nonetheless, this study offers a brief glimpse into the treatment of depression among a sample of women with SCI, a population that has received inadequate attention in the male-dominated literature on SCI. This study suggests that, although not normative, depression among women with SCI is a frequent threat to well-being that may be underdiagnosed and undertreated, particularly with nonpharmacologic treatments.

More needs to be done by health care providers to assess, diagnose, and treat depression among women with SCI. Pain and poor health appear to be contributors to depression in our sample, suggesting that health care providers attending to the medical needs of women with SCI are in an ideal position to screen, identify, and provide referrals to women with SCI who are experiencing significant depression. There are a number of preventable obstacles to receiving treatment for depression, including cost, environmental barriers limiting access to in-person psychotherapy, and attitudinal barriers suggesting that depression is an expected or normative response to SCI or that psychosocial issues are a lower priority treatment consideration. We must challenge and work to address such barriers. It is imperative that we apply existing depression programs created for women with physical disabilities³⁴ to this population, develop affordable SCI-specific depression treatment programs, and strive to make such treatments accessible and available to women with SCI.

Conclusion

These results suggest that clinically significant depressive symptoms are common among women with SCI. Women with SCI who experienced

more secondary conditions, greater pain, and poorer general health reported more depressive symptoms. Depression appears to frequently go untreated; when treatment is received, it is likely to be limited to pharmacologic treatment. More needs to be done by health care providers to assess, diagnose, and treat depression among women with SCI. Disability-sensitive and affordable treatment needs to be made available to women with SCI.

Acknowledgments

Dr. Heather B. Taylor and Dr. Rosemary B. Hughes were both affiliated with Baylor College of Medicine's Center for Research on Women with Disabilities at the time the data were collected for this study. The affiliations noted reflect their

affiliations during the data analysis and manuscript preparation for the current article.

Financial support/disclosures: The study was funded by a grant awarded to Baylor College of Medicine from the Centers for Disease Control and Prevention (CDC; RO4/CCR618805; Principal Investigator, Margaret A. Nosek, PhD).

Statement of ethics: The authors certify that all applicable institutional and governmental regulations concerning the ethical use of human volunteers, including informed consent, were followed during the course of this research.

Conflicts of interest: The authors declare no conflicts of interest.

Additional contributions: We greatly appreciate the patients and medical staff of the outpatient clinics for their participation and assistance with this research study.

REFERENCES

1. Craig A, Tran Y, Middleton J. Psychological morbidity and spinal cord injury: A systematic review. *Spinal Cord*. 2009;47:108-114.
2. Elliott TR, Frank RG. Depression following spinal cord injury. *Arch Phys Med Rehabil*. 1996;77(8):816-823.
3. Fann JR, Bombardier CH, Richards JS, Tate DG, Wilson CS, Temkin NR. Depression after spinal cord injury: Comorbidities, mental health service use, and adequacy of treatment. *Arch Phys Med Rehabil*. 2011;92:352-360.
4. Hoffman JM, Bombardier CH, Graves DE, Kalpakjian CZ, Krause JS. A longitudinal study of depression from 1 to 5 years after spinal cord injury. *Arch Phys Med Rehabil*. 2011;92:411-418.
5. Krause JS, Kemp B, Coker J. Depression after spinal cord injury: Relation to gender, ethnicity, aging, and socioeconomic indicators. *Arch Phys Med Rehabil*. 2000;81:1099-1109.
6. Post MWM, van Leeuwen CMC. Psychosocial issues in spinal cord injury: A review. *Spinal Cord*. 2012;50(5):382-389.
7. National Spinal Cord Injury Model Systems. Spinal cord injury facts and figures at a glance. https://www.nscisc.uab.edu/PublicDocuments/fact_figures_docs/Facts%202013.pdf. Accessed April 17, 2013.
8. Hughes RB, Swedlund N, Petersen N, Nosek MA. Depression and women with spinal cord injury. *Top Spinal Cord Inj Rehabil*. 2001;7(1):16-24.
9. Arango-Lasprilla JC, Ketchum KM, Starkweather A, Nicholls E, Wilk AR. Factors predicting depression among persons with spinal cord injury 1 to 5 years post injury. *NeuroRehabilitation*. 2011;29(1):9-21.
10. Krause JS, Broderick L. Outcomes after spinal cord injury: comparisons as a function of gender and race and ethnicity. *Arch Phys Med Rehabil*. 2004;85(3):355-362.
11. Krause JS, Brotherton SS, Morrisette DC, Newman SD, Karakostas TE. Does pain interference mediate the relationship of independence in ambulation with depressive symptoms after spinal cord injury? *Rehabil Psychol*. 2007;52(2):162-169.
12. Kalpakjian CZ, Albright KJ. An examination of depression through the lens of spinal cord injury: Comparative prevalence rates and severity in women and men. *Womens Health Issues*. 2006;16:380-388.
13. Woolrich RA, Kennedy P, Tasiemski T. A preliminary psychometric evaluation of the Hospital Anxiety and Depression Scale (HADS) in 963 people living with a spinal cord injury. *Psychol Health Med*. 2006;11(1):80-90.
14. Bombardier CH, Fann JR, Tate DG, et al; 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(5):775-781.
15. Elliott TR, Kennedy P. Treatment of depression following spinal cord injury: An evidence-based review. *Rehab Psychol*. 2004;49(2):134-139.
16. Consortium for Spinal Cord Medicine. Depression following spinal cord injury: A clinical practice guideline for primary care physicians. <http://www.metrohealth.org/documents/patient%20services/norscis/Depression.pdf>. Accessed on April 17, 2013.

17. Ware JE, Sherbourne CD. The MOS 36-item short form health survey (SF-36). I. Conceptual framework and item selection. *Med Care*. 1992;30(6):473-483.
18. Ware JE, Kosinski M, Gandek B. *SF-36 Health Survey Manual and Interpretation Guide*. Lincoln, RI: QualityMetric Inc; 2000.
19. Ravesloot C, Seekins T, Walsh J. A structural analysis of secondary conditions experienced by people with physical disabilities. *Rehabil Psychol*. 1997;42(1):3-16.
20. Beck AT, Steer RA, Brown GK. *Manual for Beck Depression Inventory-II*. San Antonio, TX: Psychological Corp; 1996.
21. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Washington, DC: Author; 1994.
22. Segal DL, Coolidge FL, Cahill BS, O'Riley AA. Psychometric properties of the Beck Depression Inventory II (BDI-II) among community-dwelling older adults. *Behav Modif*. 2008;32(1):3-20.
23. Mackenzie CS, Reynolds K, Cairney J, Streiner DL, Sareen J. Disorder-specific mental health service use for mood and anxiety disorders: Associations with age, sex, and psychiatric comorbidity. *Depress Anxiety*. 2012;29(3):234-242.
24. Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC. Twelve-month use of mental health services in the United States. *Arch Gen Psychiatry*. 2005;62(6):629-640.
25. Reece JC, Chan YF, Herbert J, Gralow J, Fann JR. Course of depression, mental health service utilization and treatment preferences in women receiving chemotherapy for breast cancer. *Gen Hosp Psychiatry*. 2013;35(4):376-381.
26. Pampallona S, Bollini P, Tibaldi G, Kupelnick B, Munizza C. Combined pharmacotherapy and psychological treatment for depression: A systematic review. *Arch Gen Psychiatry*. 2004;61(7):714-719.
27. Griffiths KM, Christensen H, Jorm AF. Predictors of depression stigma. *BMC Psychiatry*. 2008;8:25-36.
28. Pennix BW, Millaneschi Y, Lamers F, Vogelzangs N. Understanding the somatic consequences of depression: Biological mechanisms and the role of depression symptom profile. *BMC Med*. 2013;11:129.
29. Garamszegi LZ. Comparing effect sizes across variables: Generalization without the need for Bonferroni correction. *Behav Ecol*. 2006;17(4):682-687.
30. Cohen J. *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum; 1988.
31. Wood RG, Goesling B, Avellar S. *The Effects of Marriage on Health: A Synthesis of Recent Research Evidence*. Washington DC: Mathematica Policy Research, Inc.; 2007.
32. Shin JC, Goo HR, Yu SJ, Kim DH, Yoon SY. Depression and quality of life in patients within the first 6 months after the spinal cord injury. *Ann Rehabil Med*. 2012;36:119-125.
33. Kalpakjian CZ, Houlihan B, Meade M, et al. Marital status, marital transitions, well-being, and spinal cord injury: An examination of the effects of sex and time. *Arch Phys Med Rehabil*. 2011;92(3):433-440.
34. Robinson-Whelen S, Hughes RB, Taylor HB, Hall JW, Rehm LP. Depression self-management program for rural women with physical disabilities. *Rehabil Psychol*. 2007;52:254-262.