

Loss and Depression After Traumatic Injury: The Importance of Case Management in the Recovery Process

By: Van Horn, Elizabeth R. PhD, RN, CCRN

Van Horn, E. R. (2009). Loss and depression after traumatic injury: The importance of nursing case management in the recovery process. *Professional Case Management, 14*, 66-73. DOI: 10.1097/NCM.0b013e318198d4cf

Made available courtesy of Lippincott, Williams & Wilkins:

<http://journals.lww.com/professionalcasemanagementjournal/pages/default.aspx>

*****Reprinted with permission. No further reproduction is authorized without written permission from Lippincott, Williams & Wilkins. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document.*****

Abstract:

Purposes of Study: This study aims to (1) explore the types of resource loss commonly experienced by trauma patients as a result of their injuries, (2) examine the relationship between loss of resources and depressive symptoms after traumatic injury, (3) identify the types of coping behaviors used during trauma recovery, and (4) identify other factors influencing depression after injury.

Primary Practice Setting(s): Primary settings comprise the case managers working with trauma patients in hospital, rehabilitation, outpatient, and home environments.

Methodology and Sample: This study used a cross-sectional design. A sample of 50 trauma patients who had sustained an unintentional injury in the prior 1–4 months completed a single interview during which participants completed measures of general health, loss of resources, coping, and depressive symptoms. Types of resource losses were also explored through open-ended questions.

Results: Symptoms of depression were prevalent in the sample. Participants experienced multiple and varied loss of resources, especially in financial and personal realms. Loss of resources and depression scores were significantly related. Participants reported using a variety of coping strategies, most commonly accepting the reality of their circumstances and limitations.

Implications for Case Management Practice: The case manager can serve an important role in the recognition of depression in trauma patients and the implementation of appropriate interventions, including referral to mental health professional for further evaluation. Strategies to aid in the prevention of depression after injury include early identification of individuals who are more vulnerable to resource loss, assessment of current resource stores, and facilitating and coordinating access to essential resources to aid in trauma recovery.

Article:

Traumatic injury is a global challenge, affecting millions of people annually. More than 5 million deaths occur each year because of injury, accounting for 9% of the world's deaths and 16% of all disabilities (World Health Organization, 2008). In the United States, unintentional injury is the fifth leading cause of death and a leading cause of disability (National Safety Council, 2006).

Traumatic injury is sudden and unexpected, and often it has disruptive and immutable consequences, including depression, posttraumatic stress disorder, and other psychological sequelae. The occurrence of depression has been documented in both early and later stages of recovery from traumatic injury (Kiely, Brasel, Weidner, Guse, & Weigelt, 2006; O'Donnell, Creamer, Pattison, & Atkin, 2004; Wang, Tsay, & Bond, 2005). However, much of the research to date has focused on medical and physiological factors influencing depression, with

little emphasis on processes occurring during recovery that may contribute to poor outcomes.

Trauma patients may lose physical health first, resulting in functional limitations and decreased mobility. These physical limitations, in turn, may lead to a loss of independence and freedom. Other losses related to the injury may include the death of a friend or relative, loss of a body part or a negative change in body image, loss of a vehicle or other property, and loss of employment. Qualitative researchers have found that trauma patients describe multiple and pervasive losses, including physical, emotional, psychological, financial, social, occupational, and personal autonomy losses (Cox, Turner, & Penney, 2002; Turner & Cox, 2004). The losses that these patients experience greatly diminish their sense of control and intensify their feelings of vulnerability.

Loss of employment or ability to work is a particularly significant problem for trauma patients because it affects financial status, life roles, and social interactions. For severely injured individuals, return to work may be delayed by months. Although physical disabilities affect an individual's ability to return to work after injury, several studies have found that mental and emotional problems after traumatic injury are significant determinants in return to work and may have more influence than physical factors (McCrimmon & Oddy, 2006; Sullivan, Adams, Thibault, Corbiere, & Stanish, 2006).

One theory that addresses the effects of loss is the Conservation of Resources (COR) model (Hobfoll, 1988, 1989). The COR model proposes that individuals possess resources of four types— objects (e.g., car, house), personal characteristics (e.g., sense of pride, personal health), conditions (e.g., employment, marriage), and energies (e.g., time, money)—and that individuals strive to maintain, protect, and build resources when events that threaten their security occur. When efforts to preserve resources fail, an individual experiences stress, which may produce negative psychological states, including depressive symptoms. Cumulative losses may lead to the compounding of stress, thereby increasing the magnitude of its negative effects (Hobfoll, 1988).

The COR model (Hobfoll, 1988) has been used to examine loss of resources and psychological distress after a variety of catastrophic events including war and natural disasters (Freedy, Shaw, Jarrell, & Masters, 1992; Hobfoll, 1988; O'Neill & Evans, 1999). Only one study, however, by Cordova, Walser, Neff, and Ruzek (2005) has examined emotional adjustment to loss during recovery from traumatic injury. The researchers found a significant association between loss of material resources and depression in a sample of trauma patients 2–13 months after injury.

The purposes of this study were to explore the types of losses commonly experienced by trauma patients as a result of their injuries and examine the relationship between loss of resources and depressive symptoms after traumatic injury. In addition, types of coping behaviors used during trauma recovery were also identified. Research questions for this study included the following: (1) What is the relationship between loss of resources and depression in trauma patients? (2) What types of loss of resources do trauma patients experience during recovery from traumatic injury? (3) What types of coping strategies are most often used by trauma patients during recovery from traumatic injury? (4) What other factors influence depression during recovery from traumatic injury? This study was part of a larger study reported elsewhere (Van Horn & Mishel, 2008).

METHODS

Design/Methodology

This descriptive study used a cross-sectional design. Participants completed a single interview during which all

study instruments were administered.

Setting and Sample

Following the institutional review board approval, a convenience sample of 50 participants was recruited from the trauma orthopedic clinics of two university medical centers in the southeastern United States. Participants were 25–55 years old and had sustained a blunt force, unintentional traumatic injury requiring hospitalization of at least 24 hours. Study admission criteria included ability to speak English, full-or part-time employment at the time of injury, time since injury 30 or more days and less than 4 months, and cognitive ability to participate in an interview. Individuals who had been hospitalized for injury within the last 10 years; who sustained brain or spinal cord injury, intentional injury, including gun shot wound, stabbing, assault, or self-inflicted injury; or who reported treatment of depression during 12 months prior to injury were excluded. Each participant received \$20 for involvement in the study.

Measures

Loss of resources was measured with the Conservation of Resources—Evaluation (COR-E) loss scale (Hobfoll, 1988). This tool lists 74 resources representing objects, personal characteristics, conditions, and energy resources. Individuals rate to what extent they have lost each resource on a 5-point scale, with higher scores indicating greater losses. In a sample of trauma patients, a subscale of the COR-E had an [alpha] of .88 (Cordova et al., 2005), and factor analyses from community and university samples supported multiple distinct factors including personal/attainment, financial, time, work support, intimacy, and marriage/children (Hobfoll, Lilly, & Jackson, 1992). In the current study, Cronbach's [alpha] was .94. Cronbach's [alpha] is a measure of instrument reliability that demonstrates the intercorrelation among items. Higher scores indicate that the items on an instrument are measuring the same construct (UCLA: Academic Technology Services, Statistical Consulting Group, n.d.). The widely accepted standard for an instrument in social sciences research is .70 or higher (Garson, 2008).

Coping was measured with 24 items from the COPE inventory (Carver, Scheier, & Weintraub, 1989), which were found by Livneh, Antonak, and Gerhardt (1999) to form a single coping factor when tested with persons who had lower extremity amputations because of illness or injury. Participants rate each item on a 4-point Likert scale, and the items are summed for a total score, with higher scores indicating more frequent use of coping strategies. The 24 items represent 6 types of coping: active coping, planning, seeking instrumental social support, seeking emotional social support, positive reinterpretation, and acceptance. Factor loadings for these subscales have ranged from $r = .50$ to $r = .87$ (H. Livneh, personal communication, March 25, 2004). Items on an instrument that measure similar concepts may be grouped into factors, in this case, types of coping. Factor-loading scores depict the correlation between an item and a factor (Pohlmann, n.d.). Cronbach's [alpha] in the current study was .87. The validity of the original COPE inventory as a measure of multidimensional aspects of coping was supported through principal components factor analysis, and convergent and discriminant validity have also been supported (Carver et al., 1989).

Depressive symptoms were measured using the Center for Epidemiologic Studies Depression scale (CES-D; Radloff, 1977). Individuals rate on a 4-point Likert scale how frequently during the preceding week they have experienced each of 20 specific symptoms. Scores are summed, with higher scores indicating more depressive symptoms. A score of 16 or higher is considered to indicate that depressive symptoms affect functional capacity and quality of life, and has been associated with clinical depression (Radloff, 1977; Vahle, Andresen, & Hagglund, 2000). The CES-D has established reliability with diverse populations (Ensel, 1986; Orme, Reis, & Herz, 1986). Convergent and discriminant validity of the CES-D have also been supported (Radloff, 1977;

Shinar et al., 1986). Cronbach's [alpha] for the current study was .92.

The patients' perception of physical health was measured by the physical health factor of the Medical Outcomes Study Short Form-36 (SF-36) version 2.0 (Ware, Kosinski, & Dewey, 2000). This factor is the summed score of four subscales: physical function, role physical, bodily pain, and general health. The SF-36 has established reliability (Tsai, Bayliss, & Ware, 1997) and content and construct validity (McHorney, Ware, & Raczek, 1993; Ware, 1993).

Demographic data collected included age, race, gender, marital status, education, employment status and type of work at the time of injury, current employment status, and health insurance prior to injury. Other injury data collected included injury date, type, location, mechanism, severity, and setting. Data analyses included the use of frequency statistics, Pearson correlations, and t tests.

RESULTS

A total of 87 trauma patients were approached for participation in the study, and 50 completed interviews, for a completion rate of 67%. Of those approached, 12 did not meet the study criteria, 11 declined to participate, and 14 were unable to complete the interview before the end of the study. The most common mechanism of injury was motor vehicle crash (64%), and most participants sustained multiple injuries (66%). See Table 1 for additional injury data. The participants' mean age was 39 (SD 8.4) years; they were primarily male (70%), and nearly all were Caucasian (56%) or African American (36%). They were well educated; the majority had completed some college or a graduate degree (58%). Types of employment varied; participants were skilled laborers (42%), professionals (32%), unskilled laborers (10%), self-employed (8%), and in retail (8%). All but one were working full-time when they were injured.

	<i>n</i> (%)
Injury site	
Multiple	33 (66)
Leg or knee	12 (24)
Pelvis	4 (8)
Arm	1 (2)
Mechanism of injury	
Motor vehicle crash	32 (64)
Fall	9 (18)
Crush	5 (10)
Pedestrian struck	3 (6)
Other	1 (2)
Injury setting	
Road	34 (68)
Home/yard	7 (14)
Recreation/sport	5 (10)
Work	4 (8)

TABLE 1 Sample Injury Characteristics (N = 50)

When they were interviewed, the average time since injury was 9 weeks, with a range of 1–4 months. A large majority (82%) had not returned to work, 12% were back to work part-time, and only 6% were back to work full-time. Most participants had health insurance at the time of injury (66%), although a third of the sample lacked health insurance despite being employed. Incomes varied greatly, with most participants (60%) reporting annual household incomes ranging from \$20,000 to \$60,000, 30% had incomes above \$60,000, and 10% had incomes less than \$20,000.

Symptoms of depression were prevalent in the sample. The sample mean CES-D score was 18.7 (SD 13.0). On the basis of the standard cutoff score of 16 or more, slightly more than half (52%) of the participants had a score potentially indicating clinical depression (Radloff, 1977). Using CES-D classifications, 24 (48%) had no depression (CES-D 0–14), 5 (10%) had probable mild-to-moderate depression (CES-D 15–21), and 22 (44%) had probable major depression (CES-D \geq 22; Measurement Excellence and Training Resource Information Center, n.d.).

The relationship between resource losses (total COR-E score) and depressive symptoms (total CES-D score) had a Pearson correlation of $r = .69$ ($p < .01$). Five of the six COR-E factors were also significantly associated with depressive symptoms ($r = .42-.72$, $p < .01$). Two types of losses most strongly associated with depressive symptoms were personal/attainment $r = .72$, $p < .01$ and financial resources $r = .66$, $p < .01$. These two loss factors had not only the highest average scores and the strongest correlations with depressive symptoms but also the highest intercorrelation ($r = .69$).

Participants experienced many and varied types of resource losses. Reported losses with the highest mean scores on the COR-E included “personal transportation” (3.7), “feeling that I am accomplishing my goals” (3.4), “stamina/endurance” (3.4), “feeling independent” (3.4), “adequate income” (3.3), “money for extras” (3.2), and “savings or emergency money” (3.1).

Losses were also examined within each factor of the COR-E (Hobfoll, 1988, 1989). Three of the seven most important resource losses were related to finances or income and thus, not surprisingly, the financial factor of the COR-E had the highest average score. Most of the items on this factor were related to money, income, or employment, and, as reported previously, at the time of the interview, 82% of participants were not back to work. Participants who had returned to work had shorter hospital stays ($p < .01$) and fewer losses of financial resources ($p < .05$). They did not, however, have significantly fewer losses of total resources or significantly lower depressive symptom scores.

Losses of employment and income were particularly relevant for this sample. More than half (52%) were employed in skilled or unskilled labor. A third (34%) reported some loss in employment stability, with 24% reporting that they had lost their job as a result of their injuries. In addition, 12% of participants reported that they had lost their health insurance after injury. One participant said that she was fired from her job because of her inability to return to work, and therefore, also lost her health insurance and disability income. Three participants expressed concern that their loss of physical function due to injury would prevent them from returning to their jobs.

Loss of adequate income was reported by 70% of participants, with 38% reporting great loss in this area. Loss of the ability to generate income added to other financial losses, including money for extras (70%), savings or emergency money (68%), adequate financial credit (22%), financial stability (60%), money for transportation (36%), money for advancement or self-improvement (34%), and financial help (26%).

The COR-E factor with the second highest average loss score was personal/attainment. A great majority of

participants reported losses in the following areas: stamina/endurance (92%), independence (82%), accomplishment of goals (80%), feeling of personal success (72%), and feeling valuable to others (70%). More than 60% reported losses in a sense of personal pride, having a positively challenging routine and feeling control over their lives. More than half said that they had experienced some loss of positive feelings about themselves. These losses demonstrate the impact of intrapersonal losses related to self-worth that are commonly experienced during recovery from traumatic injury and that may contribute to the development of depressive symptoms.

When participants were asked to identify any additional losses of resources they had experienced but were not on the COR-E scale, participants reported loss of the ability to perform desired activities, loss of ability to generate income, and losses related to social activities. Meaningful activities that participants reported as losses included car repair, moving furniture, recreational fishing, cooking, teaching a son to drive a manual transmission, family vacations, church activities, and attending children's soccer games. They also reported relationship losses including the death of a family member, loss of a significant other, and loss of social interactions with family members.

Several participants noted the depth and pervasiveness of their experiences of loss in statements such as, "I have lost everything and now I have to start over." "I am not the same person I was a year ago." "I am scared and angry; I'm used to being the strong one in the family; I am stuck; I don't like to talk to people." "I feel useless. I can't cook or do anything." CES-D scores for these individuals were high, ranging from 32 to 56.

To explore the types of coping behaviors these trauma patients used, the item means from the COPE scale were examined. Overall item mean scores were high, and six items were identified with a mean score 3.0 or greater. Three of these items were accepting the reality of the situation, accepting the unchangeable nature of the situation, and learning to live with the situation. The remaining three items included thinking about how to solve a problem, problem-solving in a step-by-step manner, and learning from the experience. When coping subscale scores were examined, the acceptance coping subscale had the highest mean score, followed by positive reinterpretation and active coping.

Further analyses were conducted to identify other factors that contributed to participants' depressive symptoms. Pearson correlations between CES-D total scores, the study measures, and selected demographic variables indicated that, in addition to loss of resources, physical health was significantly related to depression ($r = -.32, p < .05$). Participants with lower physical health scores had higher levels of depressive symptoms. Scores on the coping subscale of acceptance were also significantly and inversely associated with depressive symptoms ($r = -.38, p < .01$), but total coping scores were not significantly related to depression scores.

When participants were grouped by CES-D scores equal to or above 16 and scores below 16, *t* tests revealed no significant differences between these two groups in age, education, injury severity, hospital length of stay, or time since injury. However, there were significant differences between the groups in income and loss of resources. Participants with higher incomes had lower CES-D scores ($p < .05$), and participants with greater loss of resources had higher CES-D scores ($p < .01$), suggesting that individuals with lower incomes or greater resource losses are more vulnerable to depressive symptoms.

DISCUSSION

The multiple and varied losses after traumatic injury reported by participants in this study are consistent with those reported in the trauma literature (Cox et al., 2002; De Palma, Fedorka, & Simko, 2003; Halcomb, Daly, Davidson, Elliott, & Griffiths, 2005). Losses in physical health that affect return to work, employment, and

financial status are often reported (Read et al., 2004). Personal losses related to self were also experienced by most participants and were corroborated by narrative comments. Loss of personal resources as a result of physical injury has also been documented. Harms and Talbot (2007), for example, found that trauma patients experienced ongoing difficulties in social relationships related to either physical problems or a loss of self-confidence.

The interrelated nature of resources contributed to the extension of their loss in a generalized fashion. Loss of physical health status contributed to loss of ability to work and generate income. This loss affected subjects' ability to pay bills and provide for themselves and their family members. Lack of income also contributed to increasing debt and loss of monetary savings, financial credit, and financial stability. These types of losses contributed to increased financial problems, stresses, and strains, which, in turn, may have increased losses on a more personal level, including loss of positive feelings about the self, such as self-esteem or feeling valued.

Participants' inability to return to work and participate in normal daily routines due to their physical limitations may have negatively affected their feelings of accomplishment, control, independence, pride, and self-worth. And, these negative feelings, in combination with stress due to mounting financial burdens, may have contributed to participants' depressive symptoms.

The study used a convenience sample of university medical center trauma patients from two facilities in close proximity, and, thus, the findings should be generalized to other trauma populations only with caution; however, the study sample was similar in age, race, and gender to the annual trauma population of the sites. The use of cross-sectional design was also a limitation of this research, as subjects completed a single interview and changes over time were not measured.

IMPLICATIONS FOR CASE MANAGEMENT PRACTICE

The high prevalence of depressive symptoms found in this study suggests a need for regular assessment of trauma patients for depressive symptoms during follow-up care. Effective management of depressive symptoms is important because trauma patients cannot initiate strategies to prevent loss of resources if they become immobilized by depression. Individuals who demonstrate high levels of depressive symptoms should receive referrals to general practice or psychiatric physicians, other mental health care providers, or community mental health services for confirmatory diagnosis and treatment, which may include psychological counseling and medical treatment. Kelley (2008) advocates the use of a behavioral medicine assessment, especially in worker's compensation cases, to aid case managers in identifying clients' psychosocial strengths and limitations and maximizing their resources in both the recovery process and their return to work.

According to Kelley (2008), assessments should include a clinical interview and completion of instruments to assess depression, anxiety, pain, and functional limitations. The SF-36 is a 36-item measure of general health covering physical and mental health, social activities, and bodily pain (Ware et al., 2000). This instrument is easy to administer and will aid the case manager in identifying areas in which trauma patients are experiencing limitations or negative consequences as a result of their injuries. In addition, the CES-D is a 20-item measure of depressive symptoms that is easy to administer and score. The CES-D has an accepted cutoff score of 16, with higher scores potentially indicating clinical depression (Radloff, 1977).

More than half of the participants reported that they had lost positive feelings about themselves. Subjects' narrative comments corroborated the impact of the personal losses experienced after injury, indicating the loss of a former self and feelings of self-worth. Several subjects described themselves and their lives as changed in negative ways from their former selves. In light of these findings, the case manager should remain cognizant

of the cumulative nature of loss and the potential negative effects on feelings of self-worth. Because trauma patients often experience a sequence of losses and sometimes limited follow-up medical care, the case manager serves an important role in the recognition of depression in trauma patients and the implementation of appropriate interventions.

To prevent or minimize resource loss, early intervention prior to hospital discharge may be important, especially for trauma patients with short lengths of stay. Appropriate interventions include aiding the patient and family members in identifying available community resources and financial resources they might qualify for immediately or in the future. In addition, anticipatory guidance may be useful, focusing on the potential loss of resources trauma patients can expect during recovery. Assessments of job stability, financial resource stores, and available family and social support can help trauma patients and their family members comprehend the difficulties they may encounter during the recovery period. Early intervention by case managers has also been found effective in improving return to work after injury. Butler, Johnson, and Gray (2007) found that contact by nurse case managers within the first week of back injury significantly improved injured employees' return to work.

Social support has been identified as an important resource to aid trauma recovery and improve psychological well-being in trauma patients (Halcomb et al., 2005). Trauma support groups can foster social support for trauma patients, aid them in developing effective coping strategies for managing the stresses they encounter during recovery, and strengthen familial relationships. The groups could also provide support for family members of trauma patients and function as a means of developing social networks, which could serve to increase trauma patients' knowledge of and access to community resources.

Higher income was significantly related to lower CES-D scores. Therefore, trauma patients with lower socioeconomic status and limited financial resources may be more vulnerable to loss of resources and depressive symptoms. In addition to vulnerability to loss of resources, trauma patients with lower socioeconomic status have fewer resources to draw on to aid them during recovery, which may result in an extension of the recovery process. Read et al. (2004) reported that financial difficulties were moderate to severe in a sample of trauma patients and were compounded with legal and insurance issues that remained unresolved for up to a year after injury. In addition, one third of this sample continued to experience depression 1 year after injury.

Researchers have found that limited financial resources impeded trauma patients' abilities to access services to support their recovery, including physical rehabilitation, transportation, medical equipment, and financial, legal, and career counseling (De Palma et al., 2003). Inability to access these services may impede physical and functional recovery, which ultimately can contribute to cumulative losses, resource depletion, and loss spirals (Hobfoll, 1988, 1989). Therefore, early identification of individuals of lower socioeconomic status and those with physical functional limitations that threaten their ability to work and early implementation of interventions to minimize financial losses may prevent loss spirals and depressive symptoms.

These individuals may benefit from a two-pronged approach: (1) maximization of medical services, including rehabilitation, to improve physical functional recovery and ability to return to work and (2) interventions that support individuals in preserving and managing existing resource stores, to minimize loss, resource depletion, and the occurrence of depressive symptoms. Case managers are a key element in aiding these individuals in increasing knowledge of and accessing essential resources to optimize their recovery. In addition, case managers can collaborate with social workers to provide comprehensive care management that includes strategies to address patient needs related to acute care, rehabilitation, and life planning to optimize recovery outcomes.

Research on the interplay of personal characteristics, such as resilience, optimism, and self-efficacy, with resources like social support and economic assistance, may increase our understanding of why some individuals are more or less vulnerable to resource loss and depressive symptoms after injury. Greater understanding of these variables' influence on the recovery process may provide insight into other areas for intervention for trauma patients. In addition, this research could lead to the development and enrichment of community resources and social support networks to aid trauma patients in minimizing financial and personal losses after injury.

This study has shown the vulnerability of trauma patients to cumulative losses that leave them unable to fully recover from an unwanted and unanticipated injurious event. Crippling loss of resources after traumatic injury may be preventable through programs of support, the engagement of community and financial resources, and the efforts of case managers to recognize the need for intervention and initiate appropriate interventions to aid trauma patients in minimizing resource loss and reducing psychological stress. Effectively designed and implemented, intervention programs can promote successful recovery for trauma patients and enable them to return to full function in their previous roles in society.

REFERENCES

Butler, R. J., Johnson, W. G., & Gray, B. P. (2007). Timing makes a difference: Early nurse case management intervention and low back pain. *Professional Case Management, 12*, 316–327.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267–283.

Cordova, M. J., Walser, R., Neff, J., & Ruzek, J. I. (2005). Predictors of emotional adjustment following traumatic injury: Personal, social, and material resources. *Prehospital and Disaster Medicine, 20*, 7–13.

Cox, H., Turner, D., & Penney, W. (2002). Narratives of recovery from traumatic injury: Issues in the nursing care of patients in rehabilitation. *Journal of the Australian Rehabilitation Nurses' Association, 5*(3), 8–15.

De Palma, J. A., Fedorka, P., & Simko, L. C. (2003). Quality of life experienced by severely injured trauma survivors. *AACN Clinical Issues, 14*, 54–63.

Ensel, W. M. (1986). Measuring depression: The CES-D scale. In N. Lin, A. Dean, & W. M. Ensel (Eds.). *Social support, life events, and depression* (pp. 51–70). Orlando, FL: Academic Press.

Freedly, J. R., Shaw, D. L., Jarrell, M. P., & Masters, C. R. (1992). Towards an understanding of the psychological impact of natural disasters: An application of the conservation of resources stress model. *Journal of Traumatic Stress, 5*, 441–454.

Garson, G. D. (2008). Scales and standard measures. Retrieved October 16, 2008, from <http://faculty.chass.ncsu.edu/garson/PA765/standard.htm>

Halcomb, E., Daly, J., Davidson, P., Elliott, D., & Griffiths, R. (2005). Life beyond severe traumatic injury: An integrative review of the literature. *Australian Critical Care, 18*, 17–24.

- Harms, L., & Talbot, M. (2007). The aftermath of road trauma: Survivors' perceptions of trauma and growth. *Health and Social Work, 32*, 129–137.
- Hobfoll, S. (1988). *The ecology of stress*. New York: Hemisphere Publishing.
- Hobfoll, S. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513–524.
- Hobfoll, S. E., Lilly, R. S., & Jackson, A. P. (1992). Conservation of social resources and the self. In H. O. F. Veiel & U. Baumann (Eds.), *The meaning and measurement of social support* (pp. 125–141). New York: Hemisphere Publishing.
- Kelley, D. G. (2008). Physical injuries in worker's compensation: Why use behavioral medicine? *Professional Case Management, 13*, 110–112.
- Kiely, J. M., Brasel, K. J., Weidner, K. L., Guse, C. E., & Weigelt, J. A. (2006). Predicting quality of life six months after traumatic injury. *Journal of Trauma: Injury, Infection, and Critical Care, 61*, 791–798.
- Livneh, H., Antonak, R. F., & Gerhardt, J. (1999). Psychosocial adaptation to amputation: The role of sociodemographic variables, disability-related factors and coping strategies. *International Journal of Rehabilitation Research, 22*, 21–31.
- McCrimmon, S., & Oddy, M. (2006). Return to work following moderate-to-severe traumatic brain injury. *Brain Injury, 20*, 1037–1046.
- McHorney, C. A., Ware, J. E., & Raczek, A. E. (1993). The MOS 36-item short-form health survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Medical Care, 31*, 247–263.
- Measurement Excellence and Training Resource Information Center. (n.d.). Critical review of Center for Epidemiologic Studies Depression scale (CES-D). Retrieved August 1, 2006, from http://www.measurementexperts.org/instrument/instrument_reviews.asp?detail/12
- National Safety Council. (2006). *Injury facts*. 2006 Ed. Itasca, IL: Author.
- O'Donnell, M. L., Creamer, M., Pattison, P., & Atkin, C. (2004). Psychiatric morbidity following injury. *American Journal of Psychiatry, 161*, 507–514.
- O'Neill, H. K., & Evans, B. A. (1999). Psychological distress during the Red River Flood: Predicting utility of the Conservation of resources model. *Applied Behavioral Science Review, 7*, 159–169.
- Orme, J. G., Reis, J., & Herz, E. J. (1986). Factorial and discriminant validity of the Center for Epidemiological Studies Depression (CES-D) scale. *Journal of Clinical Psychology, 42*, 28–33.

Pohlmann, J. T. (n.d.). Factor analysis glossary. Retrieved October 16, 2008, from <http://www.siu.edu/~epse1/pohlmann/factglos/>

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.

Read, K. M., Kufera, J. A., Dischinger, P. C., Kerns, T. J., Ho, S. M., Burgess, A. R., et al. (2004). Life-altering outcomes after lower extremity injury sustained in motor vehicle crashes. *The Journal of Trauma: Injury, Infection, and Critical Care*, 57, 815–823.

Shinar, D., Gross, C. R., Price, T. R., Banko, M., Bolduc, P. L., & Robinson, R. G. (1986). Screening for depression in stroke patients: The reliability and validity of the Center for Epidemiologic Studies Depression scale. *Stroke*, 17, 241–245.

Sullivan, M. J. L., Adams, H., Thibault, P., Corbiere, M., & Stanish, W. D. (2006). Initial depression severity and the trajectory of recovery following cognitive—behavioral intervention for work disability. *Journal of Occupational Rehabilitation*, 16, 63–74.

Tsai, C., Bayliss, M. S., & Ware, J. E. (1997). *SF-36 health survey annotated bibliography: Second edition (1988–1996)*. Boston: Health Assessment Lab, New England Medical Center.

Turner, D., & Cox, H. (2004). Facilitating posttraumatic growth. *Health and Quality of Life Outcomes*, 2, 1–9.

UCLA: Academic Technology Services, Statistical Consulting Group. (n.d.). Introduction to SAS. Retrieved October 16, 2008, from <http://www.ats.ucla.edu/stat/sas/notes2/>

Vahle, V. J., Andresen, E. M., & Hagglund, K. J. (2000). Depression measures in outcomes research. *Archives of Physical Medicine and Rehabilitation*, 81(Suppl. 2), S53–S62.

Van Horn, E. R., & Mishel, M. (2008). Loss of resources and depressive symptoms after traumatic injury [online]. *Southern Online Journal of Nursing Research*, 8(3). ISSN: 1538–0696 CINAHL AN: 2010058219.

Wang, C. H., Tsay, S. L., & Bond, A. E. (2005). Post-traumatic stress disorder, depression, anxiety, and quality of life in patients with traffic-related injuries. *Journal of Advanced Nursing*, 52, 22–30.

Ware, J. E. (1993). *SF-36 health survey: Manual and interpretation guide*. Boston: The Health Institute, New England Medical Center.

Ware J. E., Kosinski M., & Dewey J. E. (2000). *How to score version 2 of the SF-36 health survey*. Lincoln, RI: QualityMetric.

World Health Organization. (2008). 10 Facts on injury and violence. Retrieved June 21, 2008, from <http://www.who.int/features/factfiles/injuries/facts/en/index.html>

