Predicting quality of life 5 years after medical discharge for traumatic spinal cord injury

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Objectives. This study tested an a priori contextual model of the mediating effects of participation on the predictive relationships of functional impairment, family satisfaction, and pain to quality of life (QoL) following traumatic spinal cord injury (SCI).

Design. A longitudinal design was used to study 144 persons following discharge for traumatic SCI. Predictor variables included functional impairment and family satisfaction (at 12 months post-discharge) and the presence of pain (at 24 months), and mediating variables were two indicators of participation (assessed 48 months post-discharge). Life satisfaction and self-rated health status at 60 months post-discharge were the outcome variables.

Methods. A path model tested hypothesized prospective effects of functional impairment, family satisfaction and pain on participation and the subsequent effects of participation on the QoL variables.

Results. Greater functional impairment and pain were predictive of less participation, and participation significantly predicted both indicators of QoL. The two participation variables mediated the relationship of functional impairment and pain to life satisfaction over time. Family satisfaction had an indirect effect on QoL through its association with social integration.

Conclusions. Participation appears to mediate the prospective influence of functional impairment, family satisfaction, and pain on QoL in the years following SCI. These findings provide insight into factors that can predict QoL post-SCI and support the use of contextual models to understand the temporal influence of disability and psychological variables on participation and subsequent QoL.

Statement of contribution

What is already known on this subject?
- Life satisfaction and self-rated health status are important aspects of quality of life following traumatic spinal cord injury.
- Functional impairment has been inconsistently predictive of these variables over time.
- Prospective research to date has not examined the mediating effects of participation in predicting quality of life.

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Considerable research over the past 20 years has expanded our understanding of quality of life (QoL) experienced by persons who traumatically incur spinal cord injuries (SCIs). Unfortunately, the bulk of this research has been cross-sectional, and much of the prospective, longitudinal work has not been guided by theoretical models that might explain inter-relationships that can exist among predictor variables or provide a priori tests of these relations in the prediction of QoL indicators.

Life satisfaction in the years following SCI onset is inconsistently related to the severity of the injury and with indicators of functional impairment (Dijkers, 2005). The reasons for this inconsistency are not understood. In contrast, life satisfaction following SCI is inversely associated with the presence of persistent pain secondary to SCI (Budh & Osteraker, 2007; Putzke, Richards, Hicken, & DeVivo, 2002) and life satisfaction is also affected by the quality of close relationships (that may or may not be supportive or facilitative; Müller, Peter, Cieza, & Geyh, 2012). Furthermore, life satisfaction post-SCI seems particularly sensitive to the degree to which a person can participate in desired activities (Hammell, 2004; Whiteneck et al., 2004), in a fashion consistent with the model espoused by the International Classification of Functioning, Disability and Health (ICF; World Health Organization, 2001). Greater mobility, in particular, is associated with greater life satisfaction in cross-sectional (Elliott, Uswatte, Lewis, & Palmatier, 2000; Study 4) and prospective research (Charlifue & Gerhart, 2004; Richards et al., 1999). Severe injuries are associated with less participation, generally (Richards et al., 1999; Whiteneck et al., 2004) and individuals with SCI can experience declines in participation over time (Charlifue & Gerhart, 2004).

Unfortunately, few studies to date have examined these factors in contextual models that could reveal how they may have simultaneous influences on each other in the prediction of life satisfaction over time. Of the few studies that are available, functional impairment and pain secondary to SCI (van Leeuwen et al., 2011) and psychological characteristics and participation (van Leeuwen et al., 2012) appear to have independent contributions to the prediction of life satisfaction. To best understand these inter-relationships, contextual models are needed to take into consideration the interplay of personal, environmental, and familial factors and how these operate ‘...in relation to health and functioning’ (Müller et al., 2012, p. 104). The lack of this kind of research limits our ability to understand ‘...the mechanisms at work in the QoL post-SCI’, and it undermines our ability to ‘...develop and provide strategic behavioral and environmental interventions’ (Warren, Williamson, Erosa, & Elliott, 2013, p. 399).

In the present study, we examine the temporal influences of familial, functional, and health variables on participation and how, in turn, they prospectively predict elements of QoL following SCI. We used two recommended indicators of QoL as outcome variables: life satisfaction and self-rated health status (Alexander et al., 2009). There is sufficient evidence linking the same behavioural, social, and psychological mechanisms to both life
satisfaction and self-rated health among persons with SCI (Post, Ros, & Schrijvers, 1999). We adopt a dynamic, longitudinal view of QoL following SCI for this study (Elliott & Warren, 2007) to conceptualize the ways in which important predictor variables (such as functional impairment, pain, family satisfaction) may affect mediating variables (e.g., participation) that subsequently impact QoL (life satisfaction, health status). These outcomes are part of a ‘…dynamic and fluid process in which characteristics of the person and the injury, their social and interpersonal world…and the historical and temporal context interact to influence physical and psychological health’ (Elliott & Rivera, 2003, p. 423).

We conducted a secondary analysis of data from a longitudinal project to study the influence of functional impairment and family satisfaction assessed 1 year post-discharge, and the presence of pain reported 2 years post-discharge on life satisfaction and self-rated health measured 5 years post-discharge. We expected their influence to be mediated by two indicators of participation – mobility and social integration – assessed 4 years post-discharge. We expected that greater functional impairment, lower family satisfaction, and the presence of pain would impede participation, thus resulting in lower mobility and social integration 2 years later. In contrast, an absence of pain, greater functional ability, and greater family satisfaction should facilitate participation over this same time period. Although greater functional ability and family satisfaction and the absence of pain might be associated with higher life satisfaction and self-rated health, we suspected that these relationships would be best understood in the context of their relationship with participation.

Methods
Participants
Participants were a subset of a longitudinal study of adjustment following traumatic disability conducted by a university research centre in the south-eastern region of the United States. Individuals with traumatic SCI were eligible to participate if they: (1) had an acute-care length of stay in one of the eight hospitals for 3 or more days; (2) resided and were injured in one particular south-eastern state; (3) were discharged alive from one of the eight acute-care hospitals between 1 October 1989 and 30 September 1992; (4) were more than 17 years at the time of the sustained injury; and (5) agreed to participate in regularly scheduled telephone follow-up interviews conducted by centre personnel. Prospective participants were identified from acute-care medical records and were first contacted at 12 months post-discharge. A trained interviewer collected data from individuals who consented to participate in the study.

One hundred and forty-four persons (108 men, 36 women) with SCI consented to participate. The average age was 37 (men, mean age = 36; women, mean age = 39). Most participants listed their race as White (n = 96; 66.7%; Black, n = 48; 33.3%). At the time of injury, 35.4% of the subset were single, 45.1% were married, 11.1% were divorced, 4.2% were separated, and 4.2% were listed as ‘Other/Unknown’. Range of days in inpatient rehabilitation was 0–365, with average days in inpatient rehabilitation at 36. Range of days in outpatient rehabilitation was 0–840, and the average days in outpatient rehabilitation was 81. Average severity of disability on the Abbreviated Injury Scale (Committee on Injury Scaling, 1985) at 12 months post-discharge was ‘Serious’ based on the ratings conducted by trained personnel who reviewed the medical charts.
Procedure
A trained interviewer conducted telephone interviews approximately 12 months after
the patient was medically discharged. Subsequent interviews were conducted at 24, 48,
and 60 months post-discharge. Measures were selected for the larger project to assess
variables theoretically and clinically relevant to adjustment across the separate disability
conditions that were studied. For purposes of this study, we examined predictor variables
measured at the 12th (functional impairment, family satisfaction) and 24th month (pain),
the potentially mediating variables of participation assessed at the 48th month, and the
outcome variables assessed at the 60th month.

Predictor variables
Functional impairment
Functional impairment at the 12th month was assessed with the Functional Independence
Measure (FIM; Keith, Granger, Hamilton, & Sherwin, 1987). The FIM is a self-report
questionnaire used to assess the need for assistance across various functional domains.
The FIM has 18 questions that are rated on a Likert-type rating scale (ranging from 1 to 7).
Higher scores indicate greater functional ability. The FIM has demonstrated good inter–
rater agreement (total FIM, 0.96; Granger & Hamilton, 1992). The internal reliability
coefficient for this study was .95.

Family satisfaction
The Family Satisfaction Scale (FSS; Olson & Wilson, 1982) was administered at the 12th
month to assess family cohesion and adaptability. It has 14 items that are rated on a
Likert-type scale ranging from 1 (dissatisfied) to 5 (extremely satisfied). Responses are
summed to yield a total score. Higher scores indicate greater family satisfaction. The
internal reliability coefficient for the FSS in this study was .94.

Pain
Participants were asked at the 24th-month assessment if they experienced pain and if a
doctor said the pain resulted from their injury. Respondents reported yes (coded as 0) or
no (coded as 1) to the item. The dichotomous measure of pain is useful in understanding
differences between individuals with and without pain post-SCI (Budh & Osteraker, 2007;

Mediating variables
Although the FIM assesses specific bodily impairments imposed by disabling and targeted
in clinical rehabilitation (McDowell, 2006, p. 141), it lacks environmental sensitivity and it
does not assess participation in desired activities in naturalistic, community settings. The
Craig Hospital Assessment and Reporting Technique (CHART; Whiteneck et al., 1988)
was developed to assess the extent of a persons’ handicap in participating in desired
activities, as conceptualized by the World Health Organization (Whiteneck, Charlifue,
Gerhart, Overholser, & Richardson, 1992). It is considered the best available instrument
for measuring participation following SCI (Ullrich et al., 2012). Two scales on the CHART
associated with life satisfaction among persons with SCI in previous research (Charlifue &...
Gerhart, 2004) were selected to assess the mediating variables of participation: mobility and social integration. These subscales have demonstrated good test–retest reliability: .80 and .95, respectively (Hall, Dijkers, Whiteneck, Brooks, & Krause, 1998).

Mobility
The CHART Mobility subscale was assessed at the 48th month; it assesses a person’s ability to be mobile in their surroundings, both inside and outside their home (Whiteneck et al., 1988). Scores range from 0 to 100, and higher scores indicate great mobility in the environment (Whiteneck et al., 1988). Examples of items include ‘Can you use your transportation independently?’ and ‘Does your transportation let you get out whenever you want?’

Social integration
The CHART Social Integration subscale was used at the 48th month to assess participation in social interaction with others (Whiteneck et al., 1988). Scores range from 0 to 100; higher scores indicate greater social integration (Whiteneck et al., 1988). Examples of items include ‘Do you live alone?’ and ‘How many friends (non-relatives contacted outside business or organizational settings) do you visit, phone, or write to at least once a month?’

Outcome variables
Life satisfaction
The Life Satisfaction Index – A (LSI; Neugarten, Havighurst, & Tobin, 1961) was administered at the 60th month post-discharge to assess life satisfaction. The LSI has 20 items to measure well-being, zest for life, positive mood, and congruence between desired and achieved goals. Higher scores indicate greater life satisfaction. The internal reliability coefficient for the LSI in this study was .88. The LSI is considered one of the best available measures of life satisfaction in health outcomes research (McDowell, 2006, p. 235), and at one time, it was considered the ‘…most widely used with the SCI population’ (Wood-Dauphinee & Exner, 2002, p. 144).

Self-rated health status
Self-rated health status was assessed at the 60th month post-discharge with the single item, ‘In general, how would you rate your health at the present time?’ (Speake, Cowart, & Pellet, 1989). The item has a Likert-type scoring format: 1 = Excellent (no health problems), 2 = Good (no major health problems, but a few minor health problems), 3 = Fair (several minor health problems), and 4 = Poor (major health problems affecting me daily). Responses were reverse scored for easier interpretation in this study. The use of a single item to assess self-rated health has revealed clinically and theoretically consistent results among respondents with SCI (Krahn, Suzuki, & Horner-Johnson, 2009; Machacova, Lysack, & Neufeld, 2011).

Data analysis
Descriptive statistics and Pearson correlations were examined for all variables. These analyses were conducted using IBM SPSS version 19 (IBM® SPSS® Statistics, Chicago, IL,
USA). The Mplus 5.21 program (Muthén & Muthén, 2007) was used to test hypothesized causal models. Path modelling is able to examine relationships across time between variables (predictors, mediators, and outcomes), and it is recommended for testing theoretical assumptions about the relationships between these variables (Weston, Gore, Chan, & Catalano, 2008). In the a priori theory-driven model to be tested (Figure 1), the predictor variables were FIM, pain, and family satisfaction; the mediators were mobility and social integration; and the final outcome variables were life satisfaction and self-rated health status.

Parameter estimates were based on full-information maximum-likelihood estimation (ESTIMATOR = ML in MPLUS), which incorporates all available data into the estimation process, an advantage in longitudinal research with dropouts and intermittent missing data. Standard errors of parameter estimates were based on 2,000 bootstrap samples. Bootstrapping accommodates non-normal distributions of study variables and provides the basis for testing indirect effects in mediation models using bootstrapped confidence intervals (Preacher & Hayes, 2008).

Overall model fit was assessed using the following fit indices: (1) chi-squared test of model fit, (2) comparative fit index (CFI), (3) Tucker–Lewis Index (TLI), (4) root mean square error of approximation (RMSEA), and (5) standardized root means square residual (SRMR). A non-significant chi-square ($p > .05$) provides evidence of acceptable fit, at least when sample sizes are not large (Tanaka, 1987). CFI and TLI are used to measure incremental fit, and RMSEA and SRMR are used to measure absolute fit (Kline, 2005). CFI and TLI scores above .90 are typically categorized as having adequate fit and categorized as having good fit if above .95 (Kline, 2005). RMSEA and SRMR scores below .08 are typically categorized as having adequate fit and categorized as having good fit if scores fall below .05 (Kline, 2005). For assessing indirect effects of predictors on outcomes (via mediators), bias-corrected 95% confidence intervals were computed using the BCBOOTSTRAP command in MPLUS. Confidence intervals that did not include 0 (positive lower limits) were interpreted as evidence of significant indirect effects of predictors on outcomes.

**Results**

Descriptive statistics and correlations for all variables are displayed in Table 1. Correlations between the predictor variables (FIM, pain, and family satisfaction) and the presumed mediators (mobility and social integration) were all positive, but not all statistically significant. Correlations between both presumed mediators and both outcomes (life satisfaction and self-rated health status) were all positive and statistically

![Figure 1. Theoretical model of quality of life 5 years post-discharge for spinal cord injury.](image-url)
The two presumed mediators were positively and significantly correlated with each other, as were the two outcome variables.

A priori theoretical model

Our theory-based model is displayed in Figure 1. Because the outcome variables (life satisfaction, self-rated health status) were positively correlated ($r = .25, p < .05$), we modelled both outcomes simultaneously (rather than in separate models) and estimated their residual covariance. All three predictor variables (FIM, family satisfaction, and pain) had directed paths to both mediators (mobility, social integration), and both mediators had directed paths to both outcomes. The residual covariance of the mediators was also estimated. No direct effects from predictors to outcomes were hypothesized in our a priori model (i.e., all effects of predictors on outcomes were hypothesized to be mediated effects). After our initial fit of the model, two influential outliers (Cook’s distances > 1.20) were identified; the model was then estimated with these outliers removed.

The overall fit of our theory-based model was good ($\chi^2 [N = 135, \text{df} = 6] = 8.64, p = .19; \text{CFI} = .98; \text{TLI} = .94; \text{RMSEA} = .057; \text{and SRMR} = .044$). Based on these results, it was acceptable to interpret the path coefficients. All unstandardized path coefficients and covariance statistics for the model appear in Table 2. The standardized path coefficients are depicted in Figure 2. The only directional path in the model that contradicted hypotheses was the path from family satisfaction to mobility. All other paths from predictors (FIM and family satisfaction at 12 months and pain at 24 months) to both mediators (mobility and social integration at 48 months) were positive and statistically significant (at least $p < .05$). Also consistent with our hypotheses, paths from both mediators to both outcomes (life satisfaction and self-rated health status at 60 months) were positive and statistically significant. The residual covariance between mobility and social integration was positive and statistically significant. The residual covariance between the final outcomes was positive but not statistically significant, suggesting that

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Functional independence</td>
<td>1.00</td>
<td>.05</td>
<td>.16</td>
<td>.71**</td>
<td>.37**</td>
<td>.39**</td>
<td>.34**</td>
</tr>
<tr>
<td>2. Pain</td>
<td>1.00</td>
<td>.05</td>
<td>.04</td>
<td>.12</td>
<td>.11</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>3. Family satisfaction</td>
<td>1.00</td>
<td>.05</td>
<td>.23*</td>
<td>.26*</td>
<td>-.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Mobility</td>
<td>1.00</td>
<td>.60**</td>
<td></td>
<td>.47**</td>
<td>.48**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Social integration</td>
<td>1.00</td>
<td></td>
<td>.45**</td>
<td>.39**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Life satisfaction</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>.25*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-rated health status</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Pain coded as $0 = \text{yes}$, $1 = \text{no}$. Sample sizes for correlations range from 71 to 127.

*p < .05; **p < .01.
there was little remaining association between outcomes after adjusting for the other variables in the model.

The predictor variables accounted for about 22% of the variance in social integration ($R^2 = 0.225$) and 51% of the variance in mobility ($R^2 = 0.514$). The mediators accounted for 34% of the variance in life satisfaction ($R^2 = 0.339$) and 33% of the variance in self-rated health status ($R^2 = 0.330$).

### Mediation effects

Mediation effects were tested using the MODEL INDIRECT option in MPLUS. All specific indirect paths from the three predictors (FIM, family satisfaction, pain) to each outcome (life satisfaction and self-rated health status) via each mediator (mobility and social integration) were estimated. Parameter estimates for the 12 indirect effects are presented in Table 3, along with bias-corrected 95% confidence intervals of the estimates based on
2,000 bootstrap samples. Confidence intervals that do not contain 0 provide evidence of significant mediated (i.e., indirect) effects.

Of the 12 specific indirect effects tested, three were not significant. The indirect paths from family satisfaction through mobility were not significantly related to either outcome variable. Pain did not have a significant indirect effect on self-rated health status through social integration. Pain had a significant indirect effect on self-rated health status via mobility. All other indirect effects were significant.

**Post-hoc analyses**

Although our *a priori* model fits the data well, we used modification indices to explore the possibility of adding direct effects from predictors to outcomes. Modification indices indicate the reduction in the chi-square value that would result from freely estimating a particular parameter. A modification index value of 3.84 or greater is commonly used to determine potentially important paths to estimate. No modification index for any path met this criterion. The largest modification index was 3.48 (all others <3.0) for a direct path from pain to self-rated health status. When we added a direct path from pain to self-rated health status, overall model fit improved (χ² [N = 135, df = 5] = 4.99, p = .42; CFI = 1.00; TLI = 1.00; RMSEA < 0.001; and SRMR = .032). However, the direct path from pain to self-rated health status was not statistically significant (B = .36, SE = 0.20; β = .18, p = .07).

We also examined whether dropouts from the study differed from those who completed the study through the 60-month follow-up assessment. Participants who completed the 60-month outcome assessment (n = 76) were classified as completers (regardless of any missing values on earlier assessments); all others were classified as dropouts or lost to follow-up (n = 68). Using chi-squared tests of independence for categorical variables, and independent-samples *t*-tests for continuous variables, we compared completers to dropouts on demographic and psychological variables. There were no significant group differences by gender, ethnicity, age, or any psychological variables.

### Table 3. Indirect effects from predictors to outcomes via mediators

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mediator</th>
<th>Predictor</th>
<th>Est.</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported health status</td>
<td>Mobility</td>
<td>Functional independence</td>
<td>0.009</td>
<td>0.004, 0.015</td>
</tr>
<tr>
<td>Self-reported health status</td>
<td>Mobility</td>
<td>Family satisfaction</td>
<td>0.001</td>
<td>-0.003, 0.007</td>
</tr>
<tr>
<td>Self-reported health status</td>
<td>Mobility</td>
<td>Pain</td>
<td>0.136</td>
<td>0.035, 0.323</td>
</tr>
<tr>
<td>Self-reported health status</td>
<td>Social integration</td>
<td>Functional independence</td>
<td>0.002</td>
<td>0.0002, 0.006</td>
</tr>
<tr>
<td>Self-reported health status</td>
<td>Social integration</td>
<td>Family satisfaction</td>
<td>0.004</td>
<td>0.0003, 0.014</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Mobility</td>
<td>Functional independence</td>
<td>0.082</td>
<td>-0.001, 0.268</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Mobility</td>
<td>Family satisfaction</td>
<td>0.006</td>
<td>-0.012, 0.044</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Mobility</td>
<td>Pain</td>
<td>0.643</td>
<td>0.138, 1.660</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Social integration</td>
<td>Functional independence</td>
<td>0.015</td>
<td>0.004, 0.037</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Social integration</td>
<td>Family satisfaction</td>
<td>0.032</td>
<td>0.005, 0.092</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Social integration</td>
<td>Pain</td>
<td>0.579</td>
<td>0.063, 1.539</td>
</tr>
</tbody>
</table>

Note. Est. = unstandardized estimate of indirect effect; CI = bias-corrected, bootstrapped confidence interval (lower bound, upper bound) based on 2,000 samples.
Discussion

Consistent with a dynamic conceptualization of adjustment following disability (Elliott & Warren, 2007), these findings demonstrate how disability-related and psychological variables can influence QoL through adverse effects on participation. Greater functional ability increased the likelihood of greater mobility and activity in social pursuits and accompanying opportunities to socialize years later. Participation – reflected in the mobility and social integration variables – directly impacted life satisfaction and self-rated health a year later. Furthermore, the prospective relationship of functional impairment to QoL was mediated by participation. Thus, the relationship of functional impairment to QoL over time appears to be best understood in the context of the former’s effect on participation and environmental access to meaningful activities. Similarly, the prospective relationship of pain to QoL is best understood in its detrimental effect on mobility.

These results may help us understand inconsistent findings concerning the relation of functional impairment to QoL outcomes. The mediating effect of mobility and social integration ‘...speaks to the explanation for the mechanism that drives this relationship’ (Hoyt, Imel, & Chan, 2008, p. 323) between impairment and QoL. Thus, a person who is more functionally independent may likely experience greater mobility in their surroundings and more social contacts; this participation, in time, contributes to greater life satisfaction. Similarly, individuals with higher functional independence may likely be more mobile in their surroundings and integrated within their social networks to a degree that benefits their sense of personal health. Other work has shown that CHART variables can affect the association of FIM scores with satisfaction with life (Dijkers, 1999), but the present study demonstrates how mobility and social integration, in particular, mediates this association over time.

The prospective relationship of pain to life satisfaction and self-rated health status was best understood in pain’s influence on mobility. However, the present study made no distinction in varying levels of pain. The implications of the present study may be limited to a basic appreciation of persons who report pain following SCI and those who do not. There are more sophisticated ways to assess pain in field research that can include respondents who do not experience pain (van Leeuwen et al., 2011; Putzke et al., 2002). Future study of the prospective effects of pain on QoL would benefit from these measurement approaches.

Although the CHART was originally construed as an ‘objective’ measure of participation (Whiteneck et al., 1988), there is emerging evidence that responses to the CHART are influenced by psychological factors among persons with SCI. For example, an enduring predisposition to experience negative affect was significantly associated with decreased participation in one cross-sectional study (van Leeuwen et al., 2012) and negative appraisals of disability were inversely associated with mobility and social integration in another (Kennedy et al., 2010). It is plausible that these factors may evidence direct and indirect effects (via participation) on QoL in longitudinal designs. Subjective measures of participation may be preferred in the study of participation following SCI (Whiteneck & Dijkers, 2009), and we are unaware of any objective measures of participation in the home and community in the literature. Moreover, the subjective, self-report nature of the CHART feature is consistent with the ICF position that participation should be assessed from the perspective of the individual, such that the individual’s life context, circumstance, and subjective experience in the lived environment should be respected (Reed et al., 2005). From this perspective, then, the results of present study underscore the detrimental effects of social disadvantage on QoL among persons with SCI.
(Hammell, 2004) and provide insight into how these effects may be influenced by functional impairments, family life, and secondary complications (e.g., pain).

Interestingly, family satisfaction was only associated with social integration and through it an indirect effect was found on life satisfaction. Greater family satisfaction may facilitate social integration and in this process facilitate greater life satisfaction over time. But family satisfaction appears to have no effect on mobility, nor does it appear to promote a more optimal sense of personal health. Family satisfaction may fluctuate with changes in family structure and in the quality of existing relationships, and these changes, in turn, may attenuate potential effects on participation and other aspects of QoL.

The present study has several limitations that should be considered. The majority of the sample was male and Caucasian. The study lacked a formal, standardized measure of pain, and it relied on a single-item measure of self-rated health status. Information about the completeness of lesion and severity of the SCI was not collected. The data were collected from participants who were discharged from acute-care hospitals between the years 1989 and 1992 in one south-eastern state in the United States. We do not know the degree to which these issues affect our results or their generalizability.

Our results imply that participation in the years following discharge has a measurable and pronounced effect on QoL, and there are identifiable factors that place individuals at risk of problems with participation in the years following discharge. As such, these data suggest the need for community-based programmes to identify and assist at-risk individuals with SCI to enhance their QoL.

References


Predicting QoL after SCI


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