ORIGINAL ARTICLE

Longitudinal employment outcomes in adults with pediatric-onset spinal cord injury

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Study design: Longitudinal survey.

Objectives: To determine in adults with pediatric-onset spinal cord injury (SCI) employment outcomes, longitudinal changes in employment over time and changes in psychosocial outcomes associated with employment status.

Setting: Community setting.

Methods: Adults who had sustained a SCI before 19 years of age and had completed at least three consecutive annual interviews were included in the study. Generalized estimating equation models were formulated to obtain odds ratio (OR) of change in employment status and outcomes over time.

Results: Total 1691 interviews were conducted in 283 participants, 182 men and 101 women (88% Caucasian; age at baseline, 27.3 ± 3.7 years; duration at baseline, 12.7 ± 5.0 years). At the last interview (age, 34.4 ± 5.2 years; duration, 19.9 ± 6.1 years), 49.5% were employed and 47.0% had a *baccalaureate* or post-*baccalaureate* degree. There was no significant change in employment status over time (OR 1.01, confidence interval (CI) 0.98–1.04). Odds of employment increased over time in participants who were women (1.04, CI 1.00–1.08), married (1.05, CI 1.02–1.08) and attained *baccalaureate* (1.03, CI 1.00–1.07) or post-*baccalaureate* (1.05, CI 1.02–1.08) degree. Employment odds decreased with occurrence of autonomic dysreflexia (0.80, CI 0.65–0.99), spasticity (0.80, CI 0.59–0.99) or chronic medical condition (0.83, CI 0.71–0.98). Life satisfaction scores increased over time in those who remained employed (1.11, CI 1.01–1.22); odds of depression increased over time in those who remained unemployed (1.13, CI 1.04–1.23).

Conclusion: Employment status remained relatively stable in adults with pediatric-onset SCI; however, changes in employment were associated with education, secondary health conditions and psychosocial well-being.

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Keywords: employment; longitudinal; pediatric-onset spinal cord injury; psychosocial outcomes

INTRODUCTION

Attaining employment is an important achievement for individuals with spinal cord injury (SCI), as it leads to increased independence and social integration, greater life satisfaction and improved quality of life.^{1,2} Employment rates in the SCI population are significantly lower compared with the general population, ranging from 11 to 74% depending on the definition of employment and the sample population.^{3,4} Factors associated with employment following SCI include age, age at injury, time since injury, gender, race, education, severity of SCI, medical complications and work experience, among which younger age at injury and higher education have been most consistently predictive of positive employment outcomes in adult-onset SCI.^{5–7} Employment retention, or work-life expectancy, is also decreased in individuals with adult-onset SCI compared with the general population, with employment rates dropping sharply around age 50.^{6,8}

Individuals injured in childhood or adolescence may possibly present with different employment outcomes in adulthood, as they likely have had little work experience before injury, were in the process of attaining education at the time of injury and may have

been able to adjust their future goals after sustaining the SCI. Anderson and Vogel⁹ reported an employment rate of 51% in this specific population and found education, community mobility, functional independence and lower occurrence of medical complications to be predictive of employment. In a 3-year longitudinal study investigating the stability of transition to adulthood in 166 adults with pediatric-onset SCI, Anderson *et al.* reported a 64% employment rate at the first interview, of which 83% continued to be employed after 3 years, and found gender, race, independent living and mobility to be associated with stable employment.¹⁰ These previous studies provide insight into factors associated with employment and serve as a base for longitudinal investigations on employment outcomes, which are likely to evolve over time as these young adults continue their education, achieve milestones such as marriage, and experience secondary health conditions (SHC) associated with SCI. Thus, the objectives of this study were to determine in adults with pediatric-onset SCI: (1) long-term employment outcomes; (2) changes in employment status over time in association with demographic factors and SHC; and (3) changes in psychosocial outcomes in relation to employment

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status. It was hypothesized that (1) employment rates in this population would be lower than those in the general population, but higher than those with adult-onset SCI; (2) the likelihood of change in work status over time would vary depending on injury severity, education level and occurrence of SHC; and (3) employment would be associated with positive outcomes in life satisfaction and mental health.

MATERIALS AND METHODS

This study was part of a larger longitudinal study on long-term outcomes in adults with pediatric-onset SCI. Participants were adults who had sustained their SCI before 19 years of age and had previously received rehabilitation services at one of the SCI specialty programs of Shriners Hospitals for Children in Chicago, Philadelphia and Northern California. Informed consent was obtained from individuals willing to participate in the study and annual telephone interviews were conducted for enrolled participants. This study was approved by the institutional review boards of the three Shriners Hospitals for Children.

A structured questionnaire was administered at each annual interview. Demographic data, including highest level of education and marital and employment status, were collected. Medical and injury-related information was obtained from medical records and the Shriners Hospitals for Children SCI database. Due to the relatively young age and narrow age range of the participants, age group was classified by 5-year increments into four groups: <30, 30–34, 35–39, ≥40 years. Injury severity was categorized into four American Spinal Injury Association Impairment Scale (AIS) groups: C1–4 AIS ABC, C5–8 AIS ABC, T1–S5 AIS ABC and AIS D at any level.¹¹ Final education was categorized into 5 groups according to the highest diploma/degree attained: <12 years, no high school diploma; 12 years, high school diploma or Certificate of High School Equivalency (in the US and Canada, individuals who pass the General Education Development (GED) tests are awarded a Certificate of High School Equivalency credential); 13–15 years, associate's degree, technical training, or some college; 16 years, bachelor's degree; >16 years, some graduate school, master's degree, doctorate, or professional degree. Work status was recorded as employed, unemployed and actively looking for work, unemployed and not actively looking for work, student and homemaker. Employment was defined as 'paid work', either full- or part-time employment, including self-employment. The occurrence of SHC in the previous year was recorded and included pressure ulcers, urinary tract infections (UTIs), UTIs requiring intravenous antibiotics or hospitalizations (severe UTI), autonomic dysreflexia (AD), bladder and bowel accidents (frequency ≥ once monthly), spasticity (that is, involuntary tonic and/or clonic muscle spasms that require medication), upper extremity joint pain (shoulder, elbow, wrist) and chronic medical conditions (asthma, cardiovascular disease, hypertension, stroke, diabetes mellitus, cancer and other).

Standardized measures were used to assess the association between employment and psychosocial outcomes: Satisfaction with Life Scale, Patient Health Questionnaire-9, SF-12v2 Health Survey measure of perceived health (SF-12v2) and the Craig Handicap Assessment and Recording Technique (CHART).^{12–15} These measures have been validated and used in numerous studies on life satisfaction, depression and community participation outcomes of individuals with SCI.

Analyses

To assess change over time, individuals who had completed at least three annual interviews were included in the analyses. Chi-square (χ^2) and *t*-tests were conducted to compare demographic data between study participants (three or more interviews) and those with less than three interviews. Descriptive statistics were used to present demographic and injury-related information of the participants at the first and last interviews. The distribution of age group, final education level, marital and work status were compared between the first and last interviews to provide an overview of change. The distribution of employed and unemployed participants at the last interview was compared within gender, age group, marital status, AIS severity and final education levels with χ^2 -test.

Longitudinal analyses were conducted with generalized estimating equations (GEE), as this method can account for repeated measurements correlated within a subject.¹⁶ GEE models were formulated to determine annual odds of change in employment status and psychosocial outcomes. (1) *Employment status over time*: the outcome variable was employment status, which was dichotomized as employed and unemployed; students and homemakers were excluded from the GEE models. Predictor variables were gender, marital status, AIS severity, highest education level and occurrence of SHC. As employment status was a dichotomous variable, GEE models were generated with a logit link function with binomial variance distribution. (2) *Psychosocial outcomes over time*: outcome variables were the scores of Satisfaction with Life Scale, Patient Health Questionnaire-9, SF-12v2 physical and mental components and CHART scales of physical independence, cognitive independence, mobility, economic self-sufficiency and social integration. CHART occupation scale was excluded because of redundancy with employment status. The predictor variable was employment status. GEE models were generated with an identity link function with normal variance distribution, as the outcome variables were continuous. For probable major depressive disorder (PMDD), defined as experiencing at least five symptoms 'more than half the days' (suicidal thoughts could be 'several days'), with at least one being 'presence of a depressed mood' or 'loss of pleasure or interest' in the past 2 weeks),¹³ a dichotomous outcome variable, the previously described logit link function with binomial variance was used. The autoregressive correlation matrix was used in all models to account for correlation of observations between sequential time points, and interaction between duration and predictor variables was tested to observe change over time.

Statement of ethics

We certify that all applicable institutional and governmental regulations concerning ethical use of human volunteers were followed during the course of this research.

RESULTS

Among 1131 individuals eligible for enrollment, a total of 447 (39.5%) adults with pediatric-onset SCI participated in the study, while 684 (60.5%) did not participate for a variety of reasons including death (5.7%), declined participation (8.8%), could not be located (38.4%), and enrolled but not yet interviewed (7.7%). Comparison of enrolled participants to non-participants revealed no difference in age or completeness of injury; there was a higher proportion of individuals in the participants who were female (36.7% vs 30.4%; $\chi^2 = 5.072$, $P = 0.024$), Caucasian (86.3% vs 76.0%; $\chi^2 = 16.853$, $P < 0.0001$) and those with tetraplegia (54.4% vs 41.8%; $\chi^2 = 16.265$, $P < 0.0001$). Among the 447 enrolled participants, 283 had completed three or more consecutive annual interviews in the course of up to 16 years of follow-up. Comparison of study participants ($n = 283$) to those with less than three interviews ($n = 164$) revealed no significant difference in gender, age, age at injury, duration of injury, education, marital status or employment status. There was, however, in the participant group a greater proportion of those with tetraplegia (61.6% vs 42.0%; $\chi^2 = 16.053$, $P < 0.001$) and Caucasians (89.0% vs 81.9%; $\chi^2 = 4.364$, $P = 0.037$). Demographic characteristics of participants are presented in Table 1. Changes in distribution of demographic characteristics between the first and last interviews are presented in Table 2. Over a mean interval of 7 years, the proportion of participants attaining a bachelor's degree or higher had increased from 33.2% at the first interview to 47.0% at the last interview; however, there was no change in the proportion of employed vs unemployed from the first (56.8% vs 43.2%) to last interview (58.1% vs 41.9%), with employment rates lower than those in the general population at both interviews. At the last interview (Table 3), the proportion of employed participants was significantly higher in those with a *baccalaureate* and *post-baccalaureate* degrees,

Table 1 Demographic characteristics of participants (*n* = 283)

Age, years	27.3 ± 3.7 (range, 21–37)
Age at injury, years	14.5 ± 4.3 (range, 0–18)
Duration since injury, years	12.7 ± 5.0 (range, 4–30)
<i>Gender</i>	
Male	182 (64.3)
<i>Race</i>	
Caucasian	249 (88.0)
African-American	14 (4.9)
Hispanic	12 (4.5)
Other	5 (1.9)
Missing	3 (1.1)
<i>AIS^a severity group</i>	
C1–4 ABC	46 (16.3)
C5–8 ABC	110 (38.9)
T1–S5 ABC	99 (35.0)
AIS D	28 (9.9)
<i>Level of injury</i>	
Tetraplegia	174 (61.5)
<i>Completeness of injury</i>	
Complete	195 (68.9)
<i>Number of interviews</i>	
3	283
4	231
5	183
6	143
7	92
8	65
9	48
10	35
11	24
12	15
13	5
14	1
Total interviews	1691
Mean number of interviews	4.1 ± 2.6
Median interval between interviews, years	1.1

Values are *n* (%) unless otherwise indicated.

^aAmerican Spinal Injury Association (ASIA) Impairment Scale.

Table 2 Comparison of demographic characteristics between the first and last interviews

	First interview	Last interview
Mean interval between first and last interviews, years	7.1 ± 3.6 (range, 2–16)	
Duration of injury, years	12.7 ± 5.0 (range, 4–30)	19.9 ± 6.1 (range, 7–42)
Age, years	27.3 ± 3.7 (range, 21–37)	34.4 ± 5.2 (range, 25–48)
<i>Age group, years</i>		
< 30	225 (79.5)	69 (24.4)
30–34	46 (16.3)	96 (33.9)
35–39	12 (4.2)	73 (25.8)
≥ 40	0	45 (15.9)
<i>Final education^a, years</i>		
< 12	8 (2.8)	8 (2.8)
12	35 (12.4)	25 (8.8)
13–15	146 (51.6)	117 (41.3)
16	55 (19.4)	67 (23.7)
> 16	39 (13.8)	66 (23.3)
<i>Marital status</i>		
Single	227 (80.2)	196 (69.3)
Married	56 (19.8)	87 (30.7)
<i>Work status</i>		
Employed	125 (44.2)	140 (49.5)
Unemployed, looking	35 (12.4)	38 (13.4)
Unemployed, not looking	60 (21.2)	66 (23.4)
Homemaker	13 (4.6)	21 (7.4)
Student	50 (17.7)	18 (6.4)
<i>Employment status^b</i>		
Employed	125 (56.8)	140 (58.1)
Unemployed	95 (43.2)	103 (41.9)
<i>Type of employment</i>		
Full-time	89 (71.2)	96 (68.6)
Part-time	36 (28.8)	44 (31.4)

Values are *n* (%) unless otherwise indicated.

^aEducation: < 12, no high school diploma; 12, high school diploma or General Education Development certificate; 13–15, technical training, associate's degree or some college; 16, bachelor's degree; > 16, some graduate school, master's degree, PhD or professional degree (MD, JD and so on).

^bExcluding students and homemakers.

whereas the proportion of unemployed individuals was higher in those with a high school diploma. Women and married participants also had higher rates of employment at the last interview than men and single participants, respectively.

Employment status over time

Longitudinal changes in employment status were assessed using odds ratios determined by the GEE models obtained from a total 1691 interviews (Table 4). As a whole, there was no change in employment status over time in either overall employment or full-time employment. Odds of employment over time increased 4% in women, 5% in married participants and 3 and 5% in those with a *baccalaureate* and *post-baccalaureate* degree, respectively. There was no change in employment status in men or within each AIS severity group. Compared with women, men had 46% decreased odds of being employed; however, among those who were employed, men were 79%

more likely to be employed full time. Married participants were more than twice as likely to be employed over time as single participants. Compared with the C1–4 ABC group, participants in the T1–S5 ABC group were 3 times more likely and those in the AIS D group were 2.4 times more likely to be employed over time. Participants with a *baccalaureate* and *post-baccalaureate* degree were 2.5 and 3.2 times more likely to be employed, respectively, than those without a high school diploma. The impact of SHCs on employment revealed that the occurrence of severe UTI, autonomic dysreflexia, spasticity or a chronic medical condition was associated with 23%, 26%, 26% and 16% decreased odds of employment, respectively (Table 5).

Psychosocial outcomes over time

Life satisfaction scores increased in those who continued to be employed, while the odds of having a major depressive disorder increased 13% in those unemployed (Table 6). SF-12v2 mental component scores were likely to decrease in participants who were

Table 3 Distribution of employment status^a at last interview within demographic groups

	Employed	Unemployed	Significance
<i>Gender</i>			
Male	87 (52.1)	80 (47.9)	$\chi^2 = 6.656$; $P = 0.010$
Female	53 (69.7)	23 (30.3)	
<i>Age group, years</i>			
<30	32 (57.1)	24 (42.9)	$\chi^2 = 1.703$; $P = 0.636$
30–34	49 (62.0)	30 (38.0)	
35–39	34 (51.5)	32 (48.5)	
≥40	25 (59.5)	17 (40.5)	
<i>Marital status</i>			
Single	78 (44.8)	96 (55.2)	$\chi^2 = 41.020$; $P < 0.001$
Married	62 (89.9)	7 (10.1)	
<i>AIS severity</i>			
C1–4 ABC	18 (43.9)	23 (56.1)	$\chi^2 = 7.759$; $P = 0.051$
C5–8 ABC	51 (53.1)	45 (46.9)	
T1–S5 ABC	55 (67.1)	27 (32.9)	
AIS D	16 (66.7)	8 (33.3)	
<i>Highest education,^b years</i>			
<12	4 (50.0)	4 (50.0)	$\chi^2 = 25.284$; $P < 0.001$
12	6 (33.3)	12 (66.7)	
13–15	43 (45.3)	52 (54.7)	
16	40 (61.5)	25 (38.5)	
>16	47 (82.5)	10 (17.5)	

Abbreviation: AIS, American Spinal Injury Association Impairment Scale.

Values are *n* (% within gender, age, marital status, AIS or education group); bold indicates significance.^aExcluding students and homemakers.^bEducation: <12, no high school diploma; 12, high school diploma or General Education Development certificate; 13–15, technical training, associate's degree or some college; 16, bachelor's degree; >16, some graduate school, master's degree, PhD or professional degree (MD, JD and so on).

unemployed. CHART physical independence, cognitive independence and economic self-sufficiency scores were likely to increase in employed participants, whereas mobility and economic self-sufficiency scores were 35 and 51% less likely to increase in the unemployed.

DISCUSSION

This study investigated the employment outcomes in adults with pediatric-onset SCI and described longitudinally the odds of change in employment in association with demographic factors and SHCs, as well as changes in psychosocial outcomes associated with employment status. Excluding students and homemakers, 58% of the participants were employed at the last interview, of which 62% had attained at least a bachelor's degree (Tables 2 and 3). Longitudinal analysis revealed relative stability of employment status in our participants with no change over time (that is, those who were employed remain employed). Differences were found, however, among gender, marital status, AIS severity and final education levels. Our results showing higher odds of employment over time in married participants and in those with lesser severity of injury and higher education levels are in accordance with findings reported for the adult-onset SCI population.^{2,4,5,8,17} It is likely that married individuals in this population are more independent and socially integrated, both of which are associated with employment.^{9,10} In addition, the financial responsibilities in raising children among the married could be a motivating factor in acquiring employment.

Table 4 OR for employment^a over time by demographic factors

	OR (95% CI)
<i>Employment</i>	
Overall	1.01 (0.98–1.04)
Full-time	1.00 (0.96–1.03)
<i>Gender</i>	
Male	1.00 (0.97–1.03)
Female	1.04 (1.00–1.08)
<i>Marital status</i>	
Single	0.99 (0.96–1.02)
Married	1.05 (1.02–1.08)
<i>AIS severity</i>	
C1–4 ABC	0.97 (0.93–1.01)
C5–8 ABC	1.00 (0.97–1.04)
T1–S5 ABC	1.03 (0.99–1.06)
AIS D	1.02 (0.97–1.06)
<i>Final education^b</i>	
<12	0.98 (0.94–1.02)
12	0.99 (0.95–1.02)
13–15	0.99 (0.96–1.02)
16	1.03 (1.00–1.07)
>16	1.05 (1.02–1.08)
<i>Comparative OR</i>	
<i>Gender (vs female)</i>	
Male, employment	0.54 (.34–0.87)
Male, full-time	1.79 (1.02–3.13)
<i>Marital (vs single)</i>	
Married	2.47 (1.89–3.21)
<i>AIS severity (vs C1–4 ABC)</i>	
C5–8 ABC	1.66 (0.90–3.07)
T1–S5 ABC	3.01 (1.58–5.75)
AIS D	2.40 (1.03–5.58)
<i>Highest education (vs <12)</i>	
12	1.07 (0.52–2.20)
13–15	1.10 (0.54–2.24)
16	2.49 (1.17–5.31)
>16	3.18 (1.46–6.91)

Abbreviations: AIS, American Spinal Injury Association Impairment Scale; CI, confidence interval; OR, odds ratio.

Bold indicates significance.

^aExcluding students and homemakers.^bEducation: <12, no high school diploma; 12, high school diploma or General Education Development certificate; 13–15, technical training, associate's degree or some college; 16, bachelor's degree; >16, some graduate school, master's degree, PhD or professional degree (MD, JD and so on).

Compared with the education attainment level of the general population in the same age group,¹⁸ our study population had the same rate of bachelor's degree attainment (23.7% vs 23.5%), and higher rates of some college/associate's degree (41.1% vs 28.3%) and post-*baccalaureate* degree (23.3% vs 11.0%) attainment. Employment rates of our study participants with *baccalaureate* or higher degree (71.3%) were comparable to the employment rate in the general population with same level of education (76%); however, employment rates in our participants were markedly lower than the

Table 5 OR of employment^a with occurrence of a secondary health condition

	OR (95% CI)
Pressure ulcer	0.89 (0.74–1.05)
UTI	0.92 (0.81–1.05)
Severe UTI ^b	0.77 (0.60–0.98)
Bladder accident ^c	0.92 (0.73–1.14)
Bowel accident ^c	0.97 (0.70–1.34)
Autonomic dysreflexia	0.74 (0.59–0.92)
Spasticity	0.74 (0.57–0.95)
Chronic medical condition ^d	0.84 (0.72–0.98)
Shoulder pain	1.00 (0.85–1.17)
Elbow pain	1.02 (0.86–1.22)
Wrist pain	1.18 (0.99–1.40)

Abbreviations: CI, confidence interval; OR, odds ratio; UTI, urinary tract infection.

Bold indicates significance.

^aExcluding students and homemakers.

^bUTI requiring IV antibiotics or hospitalization.

^cFrequency $\geq$ once monthly.

^dAsthma, cardiovascular disease, hypertension, stroke, diabetes mellitus, cancer and other.

general population in those attaining a high school diploma (33% vs 65%) and some college/associate's degree (45% vs 70%).³ This discrepancy can be attributed to the type of work available for individuals with a high school diploma or associate's degree, which may require more physical activity, whereas those with a *baccalaureate* or higher degree may have more options that do not entail physical exertion. Education is an important factor to consider in the pediatric SCI population, as this is an area that can be controlled by the individual in preparation for adulthood. Using data collected from 18 model SCI systems, Krause *et al.*¹⁹ determined employment rates of 44.7%, 60.8%, 65.2% and 68.8% for those with an associate's, bachelor's, master's degree and PhD/MD, respectively. Although the employment rates of our participants with an associate's and bachelor's degree were very similar (45.3% and 61.5%, respectively), the employment rate of our participants with post-*baccalaureate* degrees was much higher (82.5%), possibly reflecting the effect of the younger age of our participants. Ideally, attainment of higher education before entering the active workforce in this younger SCI population would not only better prepare them for successful employment, but also allow for longer duration of employment as they progress into middle and late adulthood.

Severe UTIs, autonomic dysreflexia, spasticity and chronic medical condition were associated with significantly decreased odds of employment. The same conditions have also been reported to have increased annual odds of occurrence over time in this population,²⁰ making the outlook of employment less likely over time when these conditions are present. Previous studies investigating the impact of SHCs on employment in adults with SCI report pressure ulcers and pain to be significantly associated with employment status.^{6,21} Although not reaching statistical significance, it is notable that occurrence of most SHCs in this study had decreased odds of employment. Interestingly, the occurrence of wrist pain showed a tendency of association with increased odds of employment. Although causation cannot be concluded, this finding may be due to an increased prevalence of overuse syndrome in individuals using their hands for work and mobility, most likely those with paraplegia. Certainly, aggressive management and prevention of any SHC are imperative for overall health and well-being in SCI, as well as for better employment outcomes.

Increased odds of higher life satisfaction and CHART scores associated with employment and the increased odds of depression

Table 6 Changes in psychosocial outcome measure scores over time in relation to employment status^a

	Employed	Unemployed
	OR (95% CI)	OR (95% CI)
SWLS ^b	1.11 (1.01–1.22)	0.96 (0.87–1.06)
PHQ9 ^c	1.02 (0.94–1.09)	1.09 (1.03–1.16)
PMDD ^d	1.07 (0.96–1.21)	1.13 (1.04–1.23)
SF-12v2 ^e physical component	1.12 (0.97–1.28)	0.89 (0.78–1.03)
SF-12v2 mental component	0.97 (0.83–1.12)	0.84 (0.73–0.96)
CHART ^f physical independence	1.34 (1.14–1.57)	1.01 (0.84–1.21)
CHART cognitive independence	1.08 (1.01–1.16)	0.99 (0.92–1.07)
CHART mobility	1.10 (0.90–1.35)	0.65 (0.51–0.83)
CHART social integration	1.17 (0.96–1.43)	0.82 (0.66–1.01)
CHART economic self-sufficiency	2.09 (1.34–3.27)	0.49 (0.29–0.85)

Bold indicates significance.

^aExcluding students and homemakers.

^bSatisfaction with life scale.

^cPatient Health Questionnaire-9

^dProbable major depressive disorder, defined as presence of at least five symptoms on the PHQ9 for more than half the days in the past 2 weeks including item 1 or 2 and suicide if endorsed at all.

^eSF-12 measure of perceived health version 2.

^fCraig Handicap Assessment and Recording Technique.

in unemployment are similar to the findings reported for the adult-onset SCI population.^{1,4} The persistence of negative outcomes associated with unemployment is of concern in this sample of young adults, as there was no overall change in employment status over time, implying longer durations of depression, lower life satisfaction and decreased social participation among those who remain unemployed. One limitation of this study was that barriers to employment were not assessed, which would have provided a better understanding of factors associated with unemployment as well as a focus on strategies to overcome such barriers to improve employment opportunities, and in turn enhance life satisfaction and quality of life.

Another limitation is that our study population may not have adequately represented all adults with pediatric-onset SCI as there was a significantly higher proportion of tetraplegia, females, and Caucasians compared to the non-participants. Additional limitations of this study include lack of information on job satisfaction, job description or changes in occupation between annual interviews. Investigations into disincentives for employment, such as disability benefits,⁸ should also be assessed. Future longitudinal observations in these areas will provide better insight into employment outcomes in this population, allowing for better preparation of children with SCI in their transition to adulthood.

CONCLUSION

Employment status was stable over time in this population of adults with pediatric-onset SCI. The benefits of attaining higher levels of education and diligent prevention/management of SHCs should be emphasized in children and adolescents with SCI to increase their likelihood of successful employment and psychosocial outcomes in adulthood.

DATA ARCHIVING

There were no data to deposit.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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