

ORIGINAL ARTICLE

To work or not to work: labour market participation of people with spinal cord injury living in Switzerland

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Study design: Cross-sectional survey.

Objectives: To establish labour market participation figures of persons with spinal cord injury (SCI) living in Switzerland and to investigate determinants and consequences of having paid work.

Setting: Community.

Methods: A survey among members of the Swiss Paraplegic Association was performed in 2008. Inclusion criteria were: SCI of traumatic or non-traumatic origin, minimum age of 18 years, and living in the community for at least 1 year. A total of 559 persons with SCI returned the questionnaire (response rate 27%), of which 495 (24%) fulfilled the eligibility criteria. Bivariate and logistic regression analyses were performed based on theoretical considerations and relevant determinants found in the literature.

Results: Of the respondents of working age, 63.8% were involved in gainful employment. No significant difference between persons with para- and tetraplegia was observed. Logistic regression showed that employment was associated with age, time since onset of SCI, having worked at 2 years after initial rehabilitation, having received vocational counselling, having less pain, more years of education and more perceived importance of work. Working persons achieved a significantly higher total income. The most important reasons to work were not financial, but rather of social nature. Barriers to work were primarily health-related.

Conclusions: We found a relatively high employment rate among the studied persons with SCI living in Switzerland. However, because of the low response, it is difficult to generalise this finding.

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Keywords: spinal cord injury; employment; return to work; determinants of working; consequences of working

INTRODUCTION

In Switzerland, like in many other European countries, the high unemployment rate in persons with disabilities is one of the key issues in social policy and debate.¹ Improving labour market participation (LMP) of persons with disabilities is advantageous for everyone. For persons living with spinal cord injury (SCI), LMP has positive effects on many life areas such as self-realisation, self-esteem, health, better overall social integration and participation.^{2–3} From the employers perspective it has been shown that LMP of persons with disabilities has positive effects on the total workforce of an organisation, for example, the decreased absence and fluctuation rates.⁴ The society as a whole also benefits in terms of fewer disability pensions, higher tax revenue and more labour force diversity.³

The LMP in the international SCI population varies between 3 and 80%, in part because of inconsistent definitions of work and inconsistent study methods.⁵ If solely paid work is considered, an average LMP of 35% was found across studies.⁵ Frequently found factors associated with LMP in SCI are gender, marital status, education, disability severity, age, time since onset of SCI, social support, vocational counselling, perceived health and pain.^{2,3,5–9} However, the existing evidence on determinants of LMP in SCI is inconsistent. Although in some studies injury severity and gender are associated with LMP, others show the contrary.^{2,10} In addition, many studies^{2,3}

show that LMP increases considerably with time since onset, whereas Valtonen *et al.*¹¹ found no such association.

In Switzerland, no figures on the LMP of persons with SCI are available to date. The objective of this study was to establish LMP figures of persons with SCI living in Switzerland and to investigate determinants and consequences of having paid work.

MATERIALS AND METHODS

Design

There is no SCI registry in Switzerland to date. Therefore, we conducted a community survey among members of the Swiss Consumer Organization, the Swiss Paraplegic Association (SPA). Community surveys are not subject to ethical approval in Switzerland. The study was approved by the SPA.

Participants

Members of the SPA with para- or tetraplegia due to an SCI of traumatic or non-traumatic origin, who were older than 18 years at the time of the survey, and were living in the community for at least 1 year.

Data collection and management procedures

Data were collected online and by postal mail. Participants received an introductory letter, and the survey was announced in the consumer

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magazine 'Paracontact', and on the homepage of the SPA. One reminder letter was sent out and an additional article about the project was published in 'Paracontact' to increase participation in the survey. The survey was performed between May and August 2008.

Measurement

LMP is understood as paid employment of persons of working age (18–64 years)¹² in the competitive labour market (LM), including persons who are in paid employment but also have a partial disability pension. Not included are employment in specialised institutions and volunteer/unpaid work.

The self-report 'Nottwil Inventory for the Retrospective Assessment of Labour Market Participation in Spinal Cord Injury' (NIRAL-SCI) was developed in German by the authors to measure the social, health and employment situation of a person with SCI. It included 4 sections, dealing with demographic and injury-related information, social and work related information before and after first rehabilitation, and information about rehabilitation. NIRAL-SCI used multiple-choice questions, five item Likert scales and a visual analogue scale to assess pain. Its development was based on the recommendations of the International Labour Organisation and recent literature on LMP and the determinants of LMP in SCI.^{3,13,14} French and Italian translations were made by a professional translator, and three native speakers checked whether the questions were understandable and feasible. A copy of the questionnaire is available from the corresponding author.

Data analysis

Data were analysed with SPSS v18. The dependent variable was having paid work versus not having paid work. Group differences were tested using *t*-tests or χ^2 tests, and associations were tested using coefficients such as Cramer's *V*.¹⁵ Bonferroni correction for multiple testing was applied. Finally, a logistic regression analysis was performed with all selected possible determinants entered at once. Nagelkerke's *R*² was computed to estimate the percentage of explained variance.

RESULTS

Of the 2097 persons invited for the study, 559 completed the questionnaire (response rate: 27%). A total of 495 persons (24%) met the eligibility criteria. The average time needed to complete the online questionnaire was 41 min. The overall proportion of missing values was small (2.1%). The variable 'education within 1 year post SCI' had most missing values (14.6%).

Socio-demographic and SCI characteristics are displayed in Table 1. A total of 414 persons (83.6%) of all the participants were of working age at the time of the study. There were no significant differences between participants with paraplegia or tetraplegia, except for a lower participation of paraplegics in vocational training (44.5% vs 32%, *P*=0.002).

LMP figures of study population

The LMP of the study population at different time points is displayed in Table 2. A total of 483 participants were of working age at the onset of SCI and 87.4% (381) of them replied that they had ever worked since onset of SCI. The employment rate of persons of working age increased with time after SCI: 36.8% 6 months after initial rehabilitation, 46.2% 2 years after initial rehabilitation, up to 63.8% at the time of the study (Table 2).

Determinants and consequences of being in gainful employment

Bivariate associations of being in gainful employment in 2008 with potential determinants and results of the logistic regression are shown

Table 1 Sociodemographics and SCI-related characteristics

Variable	Value	Percent, mean/(s.d.)	Valid N	
Region (location)	German-speaking	71.5	350	
	French-speaking	20	98	
	Italian-speaking	4.5	22	
	Other	3.9	19	
	Total	100	489	
	Missing		6	
Gender	Male	74.1	495	
Marital status	Married	51.9	489	
	Missing		6	
Years of formal education		9.1/(2)	461	
	Missing		34	
Age in 2008		50.3/(13.1)	495	
Age at onset of SCI		30.9/(13.3)	495	
Time since onset of SCI (years)		18.9/(11.8)	495	
Persons of working age in 2008		83.6	414	
	Missing		81	
SCI level	Tetraplegia	29.5	145	
	Paraplegia	70.5	347	
	Total	100	492	
	Missing		3	
Impairment	Complete	49.5	240	
	Incomplete	50.5	245	
	Total		485	
	Missing		10	
Wheelchair dependence	No	12.6	62	
	Electric chair	6.1	29	
	Manual chair	81.3	400	
	Total	100	491	
	Missing		4	
Main cause of SCI	Traffic accident	37.5	184	
	Fall	19.8	97	
	Sport accident	19.2	94	
	Disease	8	39	
	Operation	6.1	30	
	Assault	1.6	8	
	Other	7.8	38	
	Total	100	490	
		Missing		5

Abbreviation: SCI, spinal cord injury.

in Table 3. In bivariate analysis, LMP was significantly associated with male gender, receiving vocational counselling, working 2 years after initial rehabilitation, importance of work, pain, and higher formal and professional education. There was no significant association between the level of SCI and having paid work. However, persons with paraplegia worked significantly more hours per week than persons with tetraplegia.

Our logistic regression model explained 47% of the variance for LMP. Classification was better for working persons (90% correct) than for not working persons (61% correct). Gender, age, vocational counselling, working 2 years after SCI, time since SCI onset, importance of work, pain, and education were significant determinants of LMP. In contrast to the bi-variate analysis, gender was not a significant predictor in the logistic regression, and age and time since SCI were. Marital status, level of SCI, cause of SCI and having children were not significant determinants in both analyses.

Table 2 Basic labour market participation figures

Variable	Value	Percent	Work percent/s.d.	Valid N	P based on χ^2
Employment status at onset of SCI	Yes	69.2		340	
	In education	23.6		116	
	Other	5.2		25	
	Retired	2.0		10	
	Total			491	
	Missing			4	
Worked since onset of SCI	Paraplegia	89.6		308	
	Tetraplegia	83.3		126	
	Total	87.4		434 ^a	0.070
	Missing			61	
In paid employment/work percentage 6 months after initial rehabilitation	Paraplegia	41.0	53.0/26.2	273	
	Tetraplegia	27.9	43.6/22.5	105	
	Retired			7	
	Total	36.8	51.0/25.8	385	0.007
	Missing			110	
In paid employment/work percentage 2 years after initial rehabilitation	Paraplegia	51.0	59.1/25.7	267	
	Tetraplegia	35.8	49.5/23.3	99	
	Retired			13	
	Total	46.2	57.0/25.5	379	0.003
	Missing			116	
In paid employment/work percentage in 2008	Paraplegia	64.7	58.3/24.6	286	
	Tetraplegia	63.4	47.5/24.8	123	
	Retired			79	
	Total	63.8	55.0/25.0	488	0.806
	Missing			39	
				12	

Abbreviation: SCI, spinal cord injury.
^aPersons in working age at the onset of SCI.

Figure 1 shows LMP by age and time since onset of SCI. Across all age groups LMP of participants with SCI was on average 20% below that of the general Swiss population. In the group with most recent SCI (injured 1 to 10 years before our survey), there was a significant decrease of the LMP of persons in the 45–54 age group as compared with the other cohorts.

Figure 2 shows the income distribution. Participants who worked had an about 40% higher total income (pension and earnings) compared with the participants who were not working (mean=\$5582 and \$3815 respectively; s.d.=2755 and 2644, respectively; $t=-6.0$; $P<0.001$).

Reasons for working and perceived barriers to work

Study participants who worked were asked for their motives to work. The most frequent answer was that working brought satisfaction (84.6%), followed by establishing contacts with others (71.4%) and the need for money (70.3%). Less frequent (<40%) answers were: 'I feel bored otherwise' (37.2%), 'work distracts me from physical problems' (36.5%), 'I feel obliged to society' (32.3%), 'work distracts me from mental problems' (22.6%), and 'my environment expects me to work' (16.5%).

The participants of working age who were not working at the time of the survey were asked why they did not work. The most important answer was: 'I have too many health problems', followed by 'too much pain' and that 'it was not possible to find a suitable job' (Figure 3).

DISCUSSION

Our study showed a relatively high participation rate (63.8%) among the studied persons with SCI in the Swiss labour market,⁵ compared with other European countries, that showed a much lower average LMP of 36% (s.d.=14.6).³ Comparisons with other studies are however limited because our study population had a higher mean age and included fewer persons with tetraplegia than most other studies.⁵ We found that the LMP in persons with SCI is similar to the LMP (64%) of all persons with disabilities in Switzerland.¹⁶ In an international perspective, both the LMP of all persons with disabilities (64% vs 50% in the 27 EU countries) and the LMP of the general population (79.5% in Switzerland vs 65.9% in the 27 EU countries) is relatively high in Switzerland.^{12,17} The difference between Switzerland and Europe in LMP of persons with SCI (28%) is, however, double the difference in LMP of all persons with disabilities (14%). Further research is necessary to explore this difference.

Findings in the literature concerning gender are inconsistent.^{2,18} In our study, gender marginally missed significance in the logistic regression analysis. The literature in SCI shows a trend that men are more likely to work than women, which was also found in our bivariate analysis.² The LMP of women in our study is more than 30% lower than that of comparable women of the general population.¹² It may be suggested that taking care of children is more time consuming and more difficult to combine with gainful employment for women with SCI than for women in the general population. However,

Table 3 Determinants of labour market participation

Categories	Employed 2008	Valid N	Bi-variate analysis		Logistic regression	
			Employed vs non employed	Bonferroni-corrected P-value=0.004 ^a	Odds ratio (exp B)	P-value
<i>Gender</i>						
Men	68.5%	305	0.165 ^b	<0.001	1.965	0.056
Women		107				
Total	50.5%	412				
Missing		83				
<i>Marital status</i>						
Married	61.5%	195	0.039 ^b	0.436	0.913	0.795
Unmarried	65.3%	213				
Total		408				
Missing		87				
<i>Age</i>						
Age in 2008		412	2.819 ^c	0.005	0.958	0.034
Missing		83				
<i>Level of SCI</i>						
Paraplegia	64.7%	286	0.012 ^b	0.806	1.009	0.978
Tetraplegia	63.4%	123				
Total		409				
Missing		86				
<i>Cause of SCI</i>						
Traumatic	64.5%	335	0.040 ^b	0.417	0.753	0.492
Non-traumatic	59.5%	74				
Total		409				
<i>Vocational counselling</i>						
Yes	68.3%	293	0.144 ^b	0.003	2.118	0.029
No	52.9%	119				
Total		412				
Missing		83				
<i>Worked 2 years after initial rehabilitation</i>						
Yes	78.0%	186	0.267 ^b	<0.001	3.242	<0.001
No	52.3%	216				
Total		402				
Missing		93				
<i>Time</i>						
Time since onset of SCI		412	-0.796 ^c	0.426	1.042	0.021
Missing		83				
<i>Importance of work in 2008</i>						
Importance in %		399	-10.088 ^c	<0.001	1.082	<0.001
Missing		96				
<i>Pain</i>						
Visual analogue scale		402	0.295 ^b	<0.001	0.853	0.011
Missing		93				
<i>Having children today</i>						
Yes	56.7%	201	0.138 ^b	0.005	0.997	0.993
No	70.0%	207				
Total		408				
Missing		87				
<i>Formal and professional education</i>						
Total years		367	-4.194 ^c	<0.001	1.118	0.039
Missing		128				

Abbreviation: SCI, spinal cord injury.

^a0.05 divided by 12.^bCramer's V (P-value based on χ^2).^ct-value independent samples.

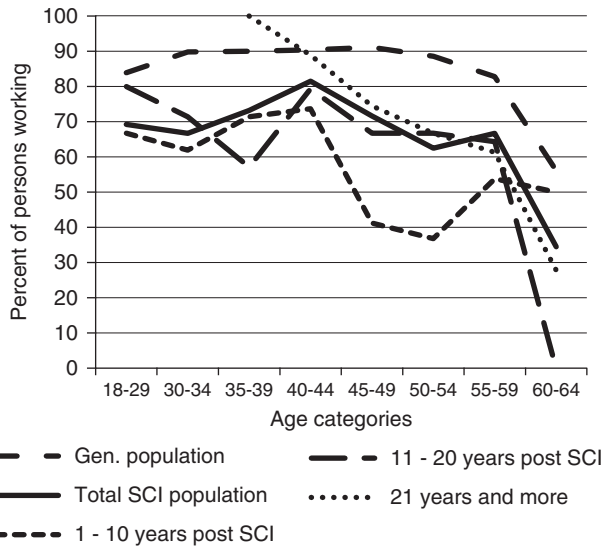


Figure 1 LMP in relation to age and time since injury (N=412).

having children alone was not a significant predictor of LMP. Future research may consider respective interaction terms.

Age and time since onset of SCI were related to LMP in the logistic regression analysis. Age would have been significant also in the bi-variate analyses if these would have been performed without correction for multiple testing. Most other studies found employment to increase with time.^{2-3,5} We found that LMP increases up to 15 years after SCI onset, but plateaus at around 40 with more than 80% of persons with SCI working, and this percentage falls afterwards.^{8,19} Rather surprising is the low LMP of persons between 45 and 54, and who sustained their SCI 1 to 10 years before this study. (Figure 1). One reason may be that lax policy on disability benefits has resulted in a generally high rate of new disability pension recipients in the 1990s and in the beginning of the 2000s.²⁰⁻²¹

As in many other studies, our results show an association between pain and LMP.³ Another finding was the weak but significant association between received vocational counselling and better LMP. The same finding was reported by Schönherr *et al.*²² for the Netherlands.

According to Krause,²⁰ a fast track exists where people return to their pre-injury job, and a slower track that is associated with re-education and training. Our study results support this finding. As mentioned before, rates increase up to 15 years post injury. Our analysis also showed that having work 2 years after initial rehabilitation is the most important predictor for later LMP.

Another finding was, that persons who rated the importance of work higher compared with other life areas (family, friends, leisure, sport), had a significantly better LMP. Anderson *et al.*² also stated that the value placed on work and level of motivation are among the most important predictors for LMP. Our impression is that it might be important to pay more attention to work motivation during rehabilitation.

As in many other studies education had a significant influence on LMP.⁵ The same holds true for the employment situation before onset of SCI. Persons who were unemployed, received a disability pension or cared for the household were less often employed, which is also consistent with the literature.¹⁹

Looking at the non-significant determinants in our study, the most striking result is that level of SCI had no influence on LMP. Anderson *et al.*² reported that findings on severity of injury are inconsistent and other studies found no influence as well. Unlike other studies, we

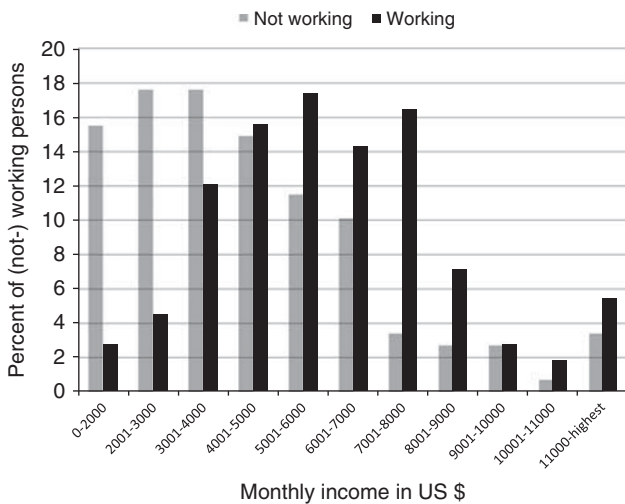


Figure 2 Monthly income and work status (N=372).

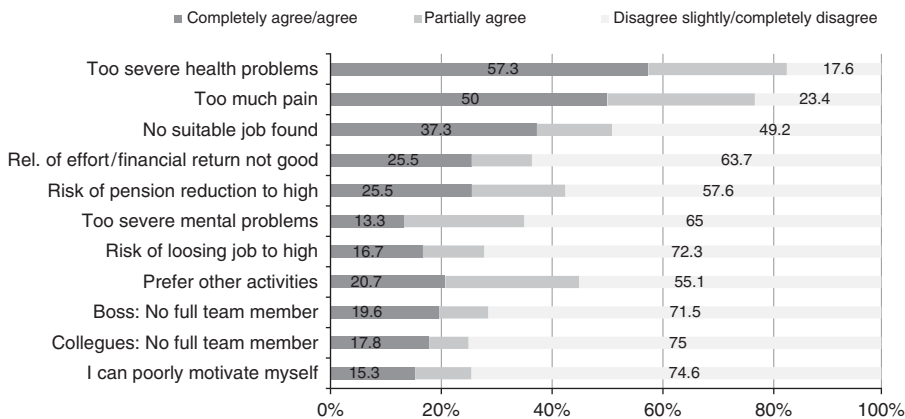


Figure 3 Perceived barriers to work (N=239).

also found no influence of traumatic vs non-traumatic cause of SCI. It has been suggested that LMP after an SCI is related to receiving a compensation, which in some countries is only paid after traumatic SCI, for example, a car accident.² However, in Switzerland compensation is largely dependent on work status at SCI onset and not on cause of SCI.

We found that the differences in income between persons with and without work are in line with the findings for the whole population with disability in the OECD (Organisation for Economic Co-operation and Development) countries.¹ One reason might be the generally higher compensation for inflation by employers than by the disability insurance, so that the real income of persons with SCI decreases over the years.²³

The two barriers perceived as most important for not being employed, having too much health problems or too much pain, were health related and are also reflected in the literature.¹⁸ The next most frequent answer was not being able to find a suitable job, which was also found by Ottomanelli et al.⁵

Limitations of the study

Limitations of the study include the low response rate of about 24%, which limits the generalisation (that is, external validity) and the study results have to be interpreted with caution. Further, we only surveyed members of the SPA, and we did not have the possibility to collect information on non-responders. The proportion of respondents with tetraplegia was relatively low, wherein we found a high rate of working persons with tetraplegia. Therefore, we cannot exclude that working persons with tetraplegia participated disproportionately. Although the multivariate analysis did not show a significant influence of cause of SCI we cannot exclude that this is an artifact due to self-selection of specific non-traumatic cases. Data on conditions that caused non-traumatic SCI are not available for our study. We cannot exclude that persons with a more problematic LMP responded less often than more successful persons.

CONCLUSION

Our study provides first data on LMP after SCI in Switzerland. We found a relatively high rate of persons with SCI who are working. Owing to the low return quote, it is, however, difficult to generalise this finding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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