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Return to work status in rehabilitated South Indian persons with spinal cord injury: a cross-sectional survey

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Abstract

Study design Cross-sectional, retrospective survey.

Objective To find the factors influencing the return to work status (RTW) in persons with spinal cord injury (SCI).

Setting Tertiary care university teaching hospital, India.

Methods A total of 109 community-dwelling persons with SCI who had been previously rehabilitated and were residing within a 100 km radius from our rehabilitation center were recruited. The return to work status in addition to the demographic, injury, work, environment, physical, and psychosocial characteristics were self-reported via interview.

Results The return to work rate was 82%. The odds of a return to work post injury was 93 times higher for persons who reported high self-motivation when compared to persons who reported low self-motivation (OR = 93.6, 95% CI 10.5–836.6). The odds of a return to work were nine times higher for persons who reported adequate social support from the family and in the community when compared to those who reported inadequate social support (OR = 8.9, 95% CI 10.5–52.6). Other factors significantly associated with return to work status include younger age at injury, being single, lower level of lesion, vocational training, independence in self-care, and accessibility and mobility to all places.

Conclusion Motivation and social support are critical to successful return to work following SCI. Comprehensive multi-disciplinary rehabilitation, which targets vocational goals, improvements in individual functioning and mobility, and community access are important for successful employment outcomes.

Introduction

Improvement in quality of life, community integration, and return to work (RTW) are important for persons with spinal cord injury (SCI) [1]. A person's RTW status is one of the key indicators of successful rehabilitation and the pinnacle of community reintegration [2]. It has a significant influence on various factors such as life satisfaction, psychological change after injury, change of family and social relationships [3, 4], and existence [1].

RTW rates published in the previous literature for SCI range from 21 to 78.6% [1, 3–12]. The participants' characteristics, data collection methods, definition of employment used, and the duration of injury are the factors attributed to a wide range in rates [13]. The facilitators for RTW reported are younger age [1, 3, 5], male gender [10, 11], higher education [3, 4, 6, 7], married [3, 6], less severe injury [5, 9, 10], independent in personal care and mobility [1, 3, 4, 6, 7, 9], and vocational training [3]. The lack of adequate transportation facilities, apprehensions about benefits or financial needs, employer preferences, and access to proper rehabilitation facilities are the barriers for returning to work [13].

In India, there are 1.5 million persons with SCI, among which a majority are male (82%) and aged 16–30 years [8]. RTW opportunities for persons with SCI in India, among the organized sectors where the work structure is more fixed and consistent, and the employees get a secured work, are very limited. We have observed that there are more opportunities among the unorganized sectors such as self-

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employment, home-based work, sheltered workshops, and job training centers. However, there is limited literature on the employment status and opportunities for persons with SCI in India.

Our center has been providing rehabilitation services at a national level for persons with SCI for the last 60 years in a university hospital setting in a small South Indian city. Our program includes a 3-month inpatient training for the patient and their caregivers, and we structure and tailor the program according to the needs of our patients. We examined the RTW outcomes, and its correlates, among our sample of rehabilitated South Indian persons with SCI.

Methods

Participants

We considered community-dwelling persons with SCI who had completed 12 weeks of inpatient rehabilitation, living within a 100-km radius from our center, a minimum of 1-year post injury, over 18 years old and who attended our annual follow-up program. We excluded patients with associated comorbidities like psychiatric and neurologic conditions. The International Standards for Neurological Classification of Spinal Cord Injury were used to classify the participants' level and completeness of injury [14].

Study design and setting

The study involved a cross-sectional sample of participants recruited from our rehabilitation center, which is part of a tertiary care university teaching hospital in a small South Indian city from November 2015 to February 2016. The rehabilitation center has a defined geographical area of 100 km radius for regular follow-up activities. Among the patients who live in this follow-up area, 70% live in rural communities with roads and houses that are inaccessible to wheelchairs. There are very few employment opportunities available for persons with disability. Moreover, the economic benefits provided by the government in the community are very less.

Intervention at the rehabilitation center

SCI rehabilitation is an 8–12 week residential, postacute rehabilitation program that starts after the injured person is stable with at least one family member staying with the patient throughout this time. The approximate cost of our inpatient program, excluding food and medicines, is around \$900 and is often self-paid because no government or insurance facility is available for rehabilitation in our country. Our program also offers a 6-month residential

vocational training program post inpatient rehabilitation to support and empower persons with SCI from rural backgrounds. The training follows and emphasizes a self-employment model to develop small-scale businesses which are home based, as there are no adequate government policies and statutes for employment of persons with disabilities in our country. The program offers tailoring as a primary vocational training and embroidery, toy making, and greeting cards making as add-on training along with a life skills course. We reported the detailed description of the intervention provided at our center in our previous publication [15].

Sample size

We recruited participants using a convenience sampling method. The formula used to calculate the sample size was $n = Z^2_{1-\alpha/2} p(1-p)/d^2$. We took a proportion of 37% RTW rate with a precision of 10% and a desired confidence interval at 95% for calculating sample size [16]. The minimum sample required to do our study was 90.

Variables

Dependent variable

RTW: defined as being employed or self-employed, either full-time or part-time (excluding students and homemakers).

Independent variables

Current age; education; marital status; level and severity of the injury was according to American Spinal Injury Association Impairment Scale; vocational training; independence in activities of daily living (ADL), transport, and access to all places; and self-motivation, family support, and social support.

Outcome measure

“Occupational therapists undertook the one-to-one interviews” using the self-reported data form. We designed the data form based on the previous literature to enable data collection. Most of the questions were closed-ended. Few of the questions were open-ended concerning their psychosocial characteristics like motivating factors and the social support to allow greater understanding. The examples of open-ended questions included: “what were the motivating factors to RTW?” and “what was the social support you had?”

The data form comprised the following sections: (i) demographic characteristics including current age, age at the time of injury, age at the time of first vocation post

Table 1 Demographic, injury, work, physical, mobility, and psychosocial characteristics and return to work status.

Variables			N (%)	Return to work status		p value
				Employed 89 (82%)	Unemployed 20 (18%)	
Demographic variables	Age at the time of injury	<40 years	92 (84)	79 (86)	13 (14)	0.008
		>40 years	17 (16)	10 (59)	7 (41)	
	Education	<10th std	81 (74)	65 (80)	16 (20)	0.519
		>10th std	28 (26)	24 (86)	4 (14)	
	Marital status	Married	68 (62)	51 (75)	17 (25)	0.021
Single		41 (38)	38 (93)	3 (7)		
Injury variables (based on AIS grades)	Level of injury	T6 and above	37 (34)	26 (70)	11 (30)	0.028
		Below T6	72 (66)	63 (88)	9 (12)	
	Severity of injury	Complete (AIS—A)	67 (61)	57 (85)	10 (15)	0.44
		Incomplete (AIS—B—D)	42 (39)	32 (76)	10 (24)	
Work related variables	Vocational training	Yes	23 (21)	23 (100)	0 (0)	0.006
		No	86 (79)	66 (77)	20 (23)	
Physical and mobility variables	ADL	Dependent	20 (18)	12 (60)	8 (40)	0.014
		Independent	89 (82)	77 (87)	12 (13)	
	Transport independence	Yes	39 (36)	36 (92)	3 (8)	0.032
		No	70 (64)	53 (76)	17 (24)	
Accessibility to all places	Yes	92 (84)	79 (86)	13 (14)	0.021	
	No	17 (16)	10 (59)	7 (41)		
Psychosocial factors	Self-motivation	Yes	96 (88)	87 (91)	9 (9)	0.001
		No	13 (12)	2 (15)	11 (85)	
	Family support	Yes	97 (89)	81 (84)	16 (16)	0.305
		No	12 (11)	8 (67)	4 (33)	
	Social support	Yes	81 (74)	73 (90)	9 (10)	0.001
No		28 (26)	16 (59)	11 (41)		

AIS American Spinal Injury Association Impairment Scale.

injury, gender, educational status, and marital status; (ii) injury characteristics such as duration of illness, level, and severity of the injury; (iii) details on the work status before and after the onset of SCI that included the work, time spent on work, vocational training, and barriers; (iv) details on environmental characteristics such as the location of residence and architectural barriers at the home and work; (v) details on physical and mobility characteristics that included information related to independence in self-care and mobility, type of mobility aid used, and the mode of transportation; (vi) psychosocial characteristics including family and social support; and (vii) financial characteristics including information such as the number of earning members in the family and annual income and expenditure details.

The final version of the data form consisted of 29 items, which we derived after administering it to five patients and was reviewed by a panel of experts in SCI. We provided options under each item and requested the participants to choose the best option that suited them. They could also

provide additional information to clarify their answers (see Supplementary File for data form).

Data analysis

We analyzed the data using SPSS for Windows (version 18.0). We presented the categorical variables such as age, education, marital status, level of injury, the severity of the injury, vocational training, ADL, transport independence, access to all places, self-motivation, family support, and social support as frequencies and percentages. Chi-square tests were used to measure the association between the proportion of patients who returned to work and demographic, injury, work, environment, physical, and psychosocial characteristics. We performed the adjusted analysis for all variables using multivariate regression analysis. The data on financial characteristics were not included for analysis since it was not sufficiently reliable.

Results

We invited 400 persons with SCI to the annual follow-up program, who lived within a 100 km radius from our center. Of the 140 people with SCI who attended the annual follow-up program, 109 consented to participate. Participants' demographic, injury, work, physical, mobility, and psychosocial characteristics are presented in Table 1.

Out of 109 participants, 89 (82%) had returned to work. Overall, 65 (73%) of these adopted their own home-based business. Participants of less than 40 years of age and who were single, lower level of SCI had better RTW status. All 23 (100%) participants who received post injury vocational training returned to work when compared to those who did not receive vocational training. Participants who reported independence in ADL, transport, and access to all places showed a better RTW status when compared to those who reported dependence on all these variables. On comparing the RTW status based on the psychosocial factors, we found significant differences in self-motivation and social support (Table 1).

Table 2 shows the results of multiple logistic regression analysis, testing the prediction for the RTW status. The variables included age at injury, marital status, level of injury, ADL independence, transport independence, access of all places, self-motivation, and social support. Self-motivation and social support were found to influence the RTW status. Persons with self-motivation had 93 times more chances for returning to work when compared to those who do not have self-motivation. Results also showed that when compared to those with less social support, participants with greater social support had nine times more chances for returning to work.

Table 2 Prediction of return to work status with multiple logistic regression analysis ($N = 109$).

Variable	Wald	<i>p</i> value	Odds ratio (OR)	95% CI for OR	
				Upper	Lower
Age at the time of injury	1.3	0.261	2.7	0.5	14.7
Marital status	3.5	0.062	10.4	0.9	121.7
Level of injury	2.6	0.105	4.4	0.7	26.3
ADL	0.9	0.326	2.4	0.4	14.6
Transport independence	0.5	0.495	2.2	0.2	20.9
Accessibility to all places	1.1	0.284	2.5	0.5	12.8
Self-motivation	16.5	0.000	93.6	10.5	836.6
Social support	5.9	0.015	8.9	1.5	52.6

Discussion

We investigated the RTW status and its predictive factors in South Indian persons with SCI who completed inpatient rehabilitation in our center. Our study showed a high (82%) RTW rate when compared to the rates published in the previous literature [1, 3–12].

We could attribute one of the primary reasons for the high RTW rate in our study to the economic necessity among our participants. A major portion of our participants consisted of males (94%) who were the sole breadwinners of the family prior to the injury and lived in a rural area (79%). A majority of them engaged in a daily wage labor. Therefore, there is a great need for a person with SCI to RTW, so they can also contribute to the family's income to some extent [15]. This is analogous to the findings of a study done in Malaysia [1].

Despite the percentage of persons returning to work being 82%, the work they engage post injury was not providing sufficient earnings for them. Many of them did not return to their previous work because of various limitations, both personal and environmental, and also the lack of adequate government programs and policies in our country for persons with disabilities. Therefore, 73% of them adopted their own business.

The most important predictive factors for RTW in our population derived from logistic regression analyses were self-motivation and social support. This is concordant with previous results, which stated that focusing on various psychosocial factors like an internal locus of control and motivation to work plays an important role in the RTW process. Individuals who had an employment were more likely to have strong social support than the unemployed [6, 17]. These results highlighted the importance of incorporating strategies to improve motivation and to provide social support systems for better reintegration into work for persons with SCI, regardless of their personal, social, and injury characteristics.

The other factors that were found to improve the chance of RTW were similar to the findings in the previous literature such as a younger age group [1, 3, 5], lower level of injury [7, 9, 18], vocational training [3], independence in ADL [8, 16] and transportation [4, 17], and those who had access to all places [19].

Limitations

Our study included only a quarter of the patients with SCI residing within the follow-up area. This underrepresentation was due to the fact that the patients were conveniently selected only from our annual follow-up program. The patients who did not participate possibly had greater physical, social, and/or economic problems, thus introducing a

bias in the results of the RTW rate. The participants might have had better independence, transport options, and social support. This could have led to an overestimate of RTW rates in our study. A larger and more random sample might have yielded different results.

Another limitation of the study was that the validity of the psychosocial data could be challenged as it was largely subjective and self-reported.

The third limitation is that the socioeconomic status could not be calculated for our participants, which is reported to be a prognostic factor associated with positive RTW outcomes [20].

The results of our study should be interpreted cautiously because the participants were chosen from our regular follow-up area and will not be representative of all persons with SCI in India, as there are limited rehabilitation and vocational training centers for persons with SCI in India.

Conclusion

One of the ultimate rehabilitation goals to achieve successful reintegration into the community is to return people to profitable and secure work [5]. Our study showed the relationship of various predictive factors and the likelihood of the person with SCI returning to work. An RTW rate of 82% was found among the participants, although we recognized that this was a selective group which was able to attend the follow-up event. Significant predictors of RTW were found to be good self-motivation and the presence of good social support. The other possible predictors which influence RTW were being younger at the age at the time of injury, being single, a lower level of lesion, having had vocational training, a higher degree of independence in self-care, transport, and access to all places. The results suggest that a comprehensive rehabilitation and vocational program, which emphasizes RTW as the ultimate goal, can improve employment status post injury.

Data availability

The data generated/analyzed during the current study are available from the corresponding author on reasonable request.

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Compliance with ethical standards

Conflict of interest All authors were salaried by the Department of Physical Medicine and Rehabilitation, Christian Medical College, Vellore. The authors declare that there is no conflict of interest.

Ethics approval The Institutional Review Board (IRB) and the ethics committee (IRB minute no: 8193) approved the research proposal. The authors certify that they followed all applicable institutional and governmental regulations concerning the ethical use of identifiable data during this research.

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