

ORIGINAL ARTICLE

Occupation in spinal cord injury patients in Turkey

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Study design: A cross-sectional survey.

Objectives: To investigate the changes in the occupation of patients after spinal cord injury (SCI) and the factors that cause this change.

Subjects: The study involved 192 Turkish patients (41 female, 151 male) who had suffered SCI. The mean age of patients was 36.1 ± 12.0 years. The mean follow-up time was 43.4 ± 38.0 months. Before injury, 138 patients were employed in gainful occupations, 26 patients were housewives, 10 were retired, 7 were students and 11 patients were unemployed. Only 15 patients (7.8%) returned to their original occupations after injury. Thirteen patients (6.8%) are currently working in another job; 1 patient (0.5%) is a student; 10 (5.2%) are retired as was earlier; 40 (20.8%) are retired on grounds of disability; 26 (13.5%) are housewives; and 87 patients (45.3%) are currently unemployed.

Methods: Prospective data collection through a face-to-face interview on an established SCI Turkish sample.

Results: In our study, the rate of returning to work was found to be 14.6%. In the evaluation of factors affecting return to work after injury, educational level ($P=0.00$), pre-injury employment ($P=0.01$) and bladder-emptying method ($P=0.03$) were statistically significantly correlated with return to work.

Conclusion: In this study, education, pre-injury employment and bladder-emptying method were found to be important factors in returning to work after SCI.

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Keywords: SCI; employment; occupation

Introduction

Spinal cord injury (SCI) is an important condition that leads to serious social and economic consequences both in the life of an individual and on his/her family. One of the objectives of rehabilitation is to facilitate returning to work, thus easing the burden on patients' lives. The majority of patients with SCI are young; thus, they should be evaluated on the basis of not only their condition but also on rehabilitation approaches that will facilitate social and occupational reintegration.¹ Working is considered to be an essential part of social integration after a major trauma because it increases the self-confidence of an individual and contributes to self-expression, and the first step toward returning to a job after an injury is taken with the help of rehabilitative treatment.²

In the definition of health, 'participating in activities' has been included by the International Function, Disability and Health Department of the World Health Organization.³

Occupational production is the most important participation for adults.⁴ After SCI, the most prominent factors include a younger age, younger age at injury onset and having a greater amount of education to affect the return to work. Having a less-severe injury, race/ethnicity and gender was associated with employment outcomes.^{5,6} In this study, we investigate the occupational changes of patients after SCI, and the factors that caused these changes.

Materials and methods

The study involved 192 patients who had suffered an SCI. The diagnosis, causes of injury, level of injury, classification of the ASIA scale, follow-up time, duration of hospitalization and ambulation levels of each patient were recorded. The education level, the bladder-emptying method, occupations (gainful job) before and after injury and marital status of each patient were learned by a face-to-face interview. All protocols were approved by the Medical Ethics Committee. All participants were informed about the study and were evaluated by the same interviewer. Descriptive statistics for demographic variables were tabulated. Outcomes were

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compared between the employed and unemployed after injury with Student's *t*-test for numerical values. The relationship between return to work and other variables was studied using logistic regression analysis. A *P*-value of <0.05 was accepted as significant.

Results

The mean age of the patients was 36.1 ± 12.0 years; the mean follow-up time was 43.4 ± 38.0 months; and the mean duration of hospitalization was 3.5 ± 2.6 weeks. Demographic and clinical characteristics of the patients have been presented in Table 1. An evaluation of the pre-injury educational levels of the patients showed that 93 patients (48.4%) were primary school graduates; 25 (13%) were junior high school graduates; 37 (19.3%) were high school graduates; and 23 patients (12%) were college (university) graduates, whereas 14 patients (7.3%) were illiterate. The marital status of the patients were as follows: 64 patients (33.3%) were single; 114 (59.4%) were married; and 14 (7.3%) were divorced. The ambulation levels of the patients have been presented in Table 2. A total of 54 patients (28.1%) had a permanent urinary catheter; 98 (51%) were on clean intermittent catheterization; and 40 (20.8%) had spontaneous urination. Before injury, 138 patients were employed in gainful occupations, 26 were housewives; 10 were retired; 7 were students; and 11 patients were unemployed. The pre-injury occupations of 95 of 138 patients were physical labor (such as farmer, construction worker, mechanic, cowman, waiter) and 43 of 138 were desk job (such as government officer, accountant, tailor). The definition of work has been presented in Table 3. Only 15 patients (7.8%) returned to their original occupations after injury. Thirteen patients (6.8%) are currently working in another job; 1 patient (0.5%) is a student; 10 (5.2%) are retired as was earlier; 40 (20.8%) are retired on grounds of disability; 26 (13.5%) are housewives; and 87 patients (45.3%) are currently unemployed. Accordingly, 28 patients (14.6%) returned to work life after injury.

In the evaluation of factors affecting return to work after injury, educational level, pre-injury employment and bladder-emptying method were statistically significantly correlated with return to work, whereas age, follow-up time, duration of hospitalization, marital status, the ASIA scale, ambulation level, level of injury and cause of injury were not significantly correlated with return to work. The factors that affect employment have been presented in Table 4.

Discussion

One of the important factors that contributes to socialization of SCI patients is returning to work. In various studies evaluating employment status after SCI, the rate of returning to work was found to be 11.5–74%.⁴ The determinants of returning to work have often been listed as age, educational level, type of injury, the occupation held before injury and the problems specific to the characteristics of the condition.¹

In this study, the rate of returning to work was found to be 14.6%. Our result was more consistent with the group having a low rate of return to work. Education was found to be an important factor in returning to work in our study. As was emphasized in earlier studies, the majority of patients who returned to work after SCI had a higher educational level. In our society, level of education is one of the questions first asked not only to handicapped patients but also to all people seeking a job. Nevertheless, one factor that was never mentioned in other studies was the bladder-emptying method of patients, which was found to be correlated with returning to work. This is once again a reminder of the fact that the bladder-emptying method is an important factor in providing independency and facilitating social adaptation. Dependency in bladder emptying, whether one works full- or part-time, causes many difficulties at various stages, such as lack of full concentration at work, his/her status in the job and medical complications. An individualized effective bladder-emptying program may increase the patient's participation in social and occupational activities by decreasing incontinence episodes and increasing independency, self-esteem and social acceptance.

In their study, Krause *et al.*⁶ reported that being Caucasian, being young at the time of injury, living with SCI for many years, being less severely injured and having more years of education facilitated returning to work. The severity and level of injury, and the age and time since injury were found to be important determinants of returning to work in some other studies, whereas in some others, these determinants were not found to be important.^{7–10} Having 61.5% of our patients complete and 17.2% tetraplegic, in this study, we have not found a significant correlation between time since injury, age of patient, level of injury, grade on the ASIA scale and return to work.

In a study conducted in Spain, the rate of returning to work among patients with a mean 5-year duration of SCI was found to be 12.5%, and being young at the time of injury, being less severely injured, having a higher Barthel index, a higher educational level and continuing education were found to be positive factors that affect returning to work. In that study, the lower rate of returning to work was attributed to a lack of occupational identity and information, as well as to the presence of environmental and individual obstacles.¹¹ In our study, unfortunately, we did not test the ADL of patients. Even though this was a factor limiting our study, on the basis of our observations, we thought that handicapped patients with a higher level of independence had a higher ratio of return to work.

A recent study from Turkey has reported a rate of 36% for returning to work after injury, and the same study has acknowledged that in developing countries, even those individuals without any disability have difficulty in finding profitable jobs, and although employers are obliged to hire disabled people up to 5% of their general employee population, according to the laws in Turkey, in selecting these individuals, they prefer to employ those with a lesser degree of disability than those with SCI.¹² In this study, the average age of patients and the etiology of injury were about the same as that in our study. On the other hand, patients

Table 1 Demographic and clinical characteristics of the patients (*n* = 192)

Gender	
Female	<i>n</i> = 41 (21.4%)
Male	<i>n</i> = 151 (78.6%)
Age (years) (mean ± s.d.)	36.08 ± 12
Follow-up time (months)	43.39 ± 38
Cause of injury	
Traffic accident	45.3%
Fall from a high place	34.4%
Fall of a heavy object	10.9%
Gunshot	9.4%
Level of injury	
Cervical	18.8%
Thoracal	61.5%
Lumbal	19.3%
Sacral	0.5%
Completeness of injury	
Incomplete tetraplegia	10.4%
Complete tetraplegia	6.8%
Incomplete paraplegia	28.1%
Complete paraplegia	54.7%
ASIA classification	
ASIA A	61.5%
ASIA B	4.7%
ASIA C	20.8%
ASIA D	12.5%
ASIA E	0.5%

Table 2 Ambulation level

Level	<i>N</i> = 192
Only wheelchair	90 (46.9%)
Non-functional ambulation ^a	91 (47.4%)
Functional ambulation ^b	11 (5.7%)

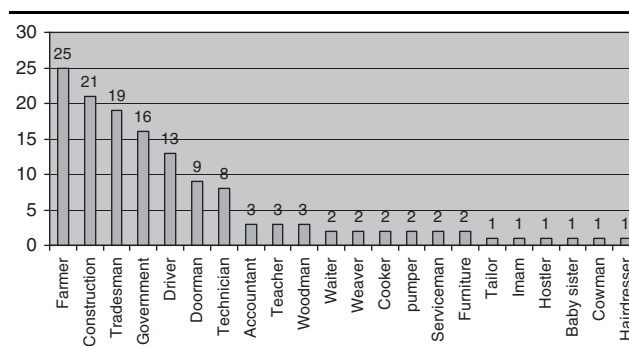
^aTherapeutic and household ambulation.

^bCommunity ambulation.

had a lower ratio of level of completeness, male sexuality and working before injury and a higher ratio of ongoing education in comparison with our study. Our study group was larger than this study. This study has been conducted in a university hospital, and most of the patients were of a higher socioeconomic and incomplete level; the rate of returning to work was found to be higher than that in our study.

Pflaum *et al.*¹³ have determined that being married positively affects decision making with regard to returning to work, whereas Hess *et al.*¹⁴ has reported that marital status is a determinant in the first 2 years of injury, but in the following years, it is no longer effective. In our study, marital status was not found to affect the decision to return to work. However, 60% of the patients were married. In our society, patients are usually, married or not, fully supported by their families and relatives and marital status is not one of the criteria first asked on application for a job.

In a study from Australia, 46.6% of SCI patients returned to work after a mean duration of 4 years, with the highest

Table 3 Occupations of spinal cord injured patients before injury**Table 4** The statistical significance between return to work and related factors

Variables	<i>P</i>
Educational level	0.00
Pre-injury employment	0.01
Bladder-emptying method	0.03
Marital status	0.16
ASIA classification	0.30
Gender	0.15
Ambulation level	0.47
Level of injury	0.86
^a Age	0.22
^a Follow-up time	0.76
^a Duration of hospitalization	0.46
Cause of injury	0.80

^athe results of Student's *t*-tests, and others are the results of logistic regression analysis.

rate of return among farmers.¹⁵ In our study, however, unlike in earlier studies, most of those (95 of 138) who worked in occupations requiring physical activity, such as farming, driving, construction work and mechanics before injury, did not return to work; rather, they retired for reasons of disability or remained unemployed. Most of our patients live in rural and undulating areas and also because of social incapacities, they do not obey even their routine outpatient controls. Therefore, these patients do not show a great ambition to return to work.

Schönherr¹ determined a rate of 60% for returning to work. The authors attributed the high rate of returning to work to the younger age of patients, incomplete injury, a certain time interval since injury and the intensive efforts of the government of Holland to encourage participants to return to work. In our country, owing to a lack of financial support and clarity of legal rights of handicapped people and an insufficient rehabilitation program related to the integration of work, returning to work after injury is more difficult and problematic.

In our study, age, hospitalization and follow-up time, level and cause of injury, the ASIA classification and ambulation level were not significantly correlated with returning to work, and, similar to earlier studies, the educational level and pre-injury employment were found to be important

determinants of returning to work. The bladder-emptying method was also found to be effective owing to its contribution to participation in social life. The rate of returning to work determined in our study was lower than that reported in earlier studies. However, as Turkey is a developing country, most of the patients were of a lower socioeconomic level and some were illiterate. In addition, our hospital serves a population of patients with such backgrounds. All of these factors may account for the low rate of returning to work. As emphasized in another study conducted in our country, finding a profitable job is highly difficult even for individuals with no disability, in developing countries. Literature review indicates that, particularly in developed countries, the rates of returning to work are higher. This suggests that in the rehabilitation of SCI patients, occupational rehabilitation should be considered just as important as functional independency, and each patient should be evaluated individually and provided with occupational alternatives. Financial and social support is also important.

In conclusion, returning to work after SCI should be an integral part of rehabilitation to enable patients to support their families as well as participate in social life. As the bladder-emptying method seemed to be a significant factor in returning to work in individuals with SCI, concentrating on bladder rehabilitation and the constitution of a suitable bladder-emptying program in this patient group seem reasonable. Thus, social support should be provided starting from the first point of presentation to medical help, and at the time that the patient is enrolled into a rehabilitation center, he/she should be evaluated for occupational status and provided with alternatives, which may encourage returning to work.

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