

ORIGINAL REPORT

ASSOCIATIONS OF DEMOGRAPHIC AND INJURY-RELATED FACTORS WITH RETURN TO WORK AMONG JOB-INJURED WORKERS WITH DISABILITIES IN SOUTH KOREA

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Objective: The aim of this study was to examine the associations between the type of return-to-work and demographic and injury-related characteristics among South Korean workers with permanent disabilities due to occupational injury.

Design: Retrospective cohort study.

Subjects: A total of 13,078 injured workers aged 20–55 years who were legally registered in 2005 as having permanent disabilities due to occupational injuries.

Methods: Workers' compensation databases were used to identify the retrospective cohort and to abstract demographic and injury-related variables. Return-to-work information was obtained from an unemployment insurance database and by telephone interview. Multinomial multivariate logistic regression analysis was used to test the association between the type of return-to-work (pre-injury job, self-employment, employment at a new firm) and independent variables.

Results: Those subjects most likely to return to pre-injury jobs were male, aged 30–39 years, college educated with minor disabilities, and treated medically for one year or less. Findings were similar for those with a different employer after injury. However, the probability of self-employment was higher, particularly for males with moderate disabilities, but relatively lower among those under the age of 30 years.

Conclusion: Special attention needs to be directed to demographic and injury-related characteristics when designing return-to-work programmes for injured workers with disabilities in South Korea.

Key words: return-to-work; occupational injuries; workers' compensation; disability.

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INTRODUCTION

Work disability following occupational injury not only has negative consequences economically, socially, and psychologically for individuals, but also places a tremendous economic and social burden on society (1–3). For this reason, return-to-work (RTW) is increasingly an issue in South Korea, as in many other societies.

In 2009, the RTW rate of South Koreans with disabilities due to occupational injuries was just 56.8% (4). This rate is relatively lower than reported for disabled workers in a study in California, USA (70%) (5) and another in Canada (85%) (6).

Since Workers' Compensation Insurance (WCI) in South Korea was introduced 45 years ago, the focus has been on cash benefits rather than on RTW by injured workers with disabilities. However, beginning in 2001, the government expanded rehabilitation services to include counselling and medical, vocational, and psycho-social rehabilitation. In particular, vocational rehabilitation benefits for workers with disabilities were legally mandated in 2008. Despite these efforts, the RTW outcomes in Korea have not been as successful as intended.

In order to maximize the proportion of workers returning to work, the factors that may affect RTW must be identified. Previous studies have demonstrated that demographic and injury-related characteristics play a major role in determining RTW outcomes after occupational injury (6–21). Meanwhile, only a few studies have assessed rates of RTW and correlates of injured South Korean workers with disabilities (12, 14, 15, 17).

Numerous measures have been used to assess RTW in previous studies (7, 8). Some focused on time and cost measures, such as time to RTW, time to claim closure, and compensation costs (7, 10, 18, 22–24); others have used full or partial RTW (21, 25, 26) and return to same work, having new work, or work training in their RTW measures (12, 14, 15, 17, 27). Taking into account that it is difficult for injured workers with disabilities to re-enter employment (12, 14) and the dearth of information on RTW outcomes in South Korea, the present study focused on the type of RTW outcomes of South Korean workers with permanent disabilities for future use as a base on which to develop effective rehabilitation programmes. In particular, the aim of this study was to assess whether these workers returned to their pre-injury jobs, became self-employed, or obtained employment with a firm other than the one at which they were injured, and to examine what are the demographic and injury-related factors associated with the type of RTW in South Korea.

METHODS

Study sample

We used administrative data maintained by the Korean Workers' Compensation & Welfare Services (KCOMWEL), employment

insurance records provided by the Korea Employment Information Services (KEIS), and data obtained by KCOMWEL rehabilitation counsellors by telephone interview. KCOMWEL provides medical treatment, disability payments, and occupational rehabilitation to all on-the-job injured workers and maintains a claims database containing information on injuries reported and accepted for compensation. KEIS performed a variety of functions, including occupational research, vocational counselling, overseas work placement and provision of employment information.

The study sample was 13,078 injured workers aged 20–55 years who were considered capable of returning to work. From the KCOMWEL claims and clinical records, we identified 37,119 injured workers who were legally registered in 2005 as having permanent disabilities after medical treatment for occupational injuries. Of these, we excluded 15,827 workers who were not in the 20–55-year age group considering the average retirement age of 55 years among South Korean workers and 8,214 workers who lacked information on RTW status and/or telephone numbers. KCOMWEL data includes demographic (gender, age, education) and injury-related characteristics (severity of disability, medical care benefits, additional medical care services). RTW outcome data were abstracted directly from the KEIS employment insurance database. Missing information was obtained by telephone interview by rehabilitation counsellors in 54 KCOMWEL branches during March 2006. Although these outcomes were dually abstracted for 13,078 workers, the type of RTW status remained unknown for 2,269 workers (17.5%) if they could not be located, did not respond to telephone messages, or refused to answer questions. KCOMWEL, as authorized by the South Korean government, gave permission for the conduct of this study.

Dependent and independent variables

The following dependent and independent variables were abstracted for analysis in this study. The type of RTW outcomes was categorized as return to pre-injury job, self-employment, work at a new firm, and unemployment. Grade of disability is determined by a physician in accordance with *Korean Workers' Compensation Act* guidelines and is used officially in South Korea. These criteria range from 1 to 14, with 1 being the greatest degree of disability. We divided these into 3 groups, i.e. severe group (grades 1–3), moderate group (grades 4–7), and mild group (grades 8–14) according to KCOMWEL guidelines. Duration of medical care benefits was measured by months in which a person with work-related injuries or disease received treatment at a domestic medical institution approved by WCI for 4 days or more. Use of additional medical care services paid for by WCI due to recurrence of related injuries or disease was assessed as yes = 1, no = 0.

Statistical analysis

Descriptive statistics were presented as means, standard deviation (SD), and percentages, as applicable. We applied multinomial multivariate logistic regression analysis to examine the association (odds ratios (OR) with 95% confidence interval (CI)) between the type of RTW outcomes and the demographic and injury-related characteristics. All analyses were performed using SPSS v18.0 (SPSS Inc.; USA). Unemployment was used as the reference group.

RESULTS

Of the study subjects, 90.1% were male with a mean age of 40.87 years (SD 8.33). Some 67.2% had a high-school education and 85.7% had minor disabilities of grades 8–14. Average duration of medical care benefits was 12.83 months (SD 12.76), and 4.6% were users of additional medical benefits services (Table I).

Of the subjects in the study sample for whom RTW outcome was known, 47.7% returned to their pre-injury job, 18.0%

Table I. Demographic and injury-related characteristics of study participants and the type of return-to-work (RTW) outcomes after work-related injury (n = 13,078)

Variable	n (%)
Gender	
Male	11,778 (90.1)
Female	1,300 (9.9)
Age	
≤29 years	1,445 (11.0)
30–39 years	4,064 (31.1)
40–49 years	5,294 (40.5)
≥50 years	2,275 (17.4)
Education	
Elementary school	568 (4.3)
Middle-school	1,874 (14.3)
High-school	8,784 (67.2)
College or higher	1,852 (14.2)
Severity of disability	
Severe (grades 1–3)	251 (1.9)
Moderate (grades 4–7)	1,614 (12.3)
Minor (grades 8–14)	11,213 (85.7)
Duration of medical care benefits	
≤6 months	4,279 (32.7)
7–12 months	4,125 (31.5)
13–36 months	4,022 (30.8)
≥37 months	652 (5.0)
Use of additional medical care services	
Yes	606 (4.6)
No	12,472 (95.4)
Type of RTW outcomes (n = 10,809) ^a	
Return to pre-injury job	5,154 (47.7)
Self-employment	225 (1.7)
Work at a new firm	1,946 (18.0)
Unemployment	3,484 (32.2)

^aRTW outcomes were unknown for 2,269 workers (see text).

were employed by a new firm, 1.7% became self-employed, and 32.2% did not return to work.

Table II presents the demographic and injury-related characteristics associated with the type of RTW. Males were more likely to return to pre-injury jobs or to a new firm than females and were much more likely to become self-employed (OR 2.83, 95% CI 1.52–5.27). Workers in the 30- to 39-year age group were more likely to return to a pre-injury job (OR 1.64, 95% CI 1.42–1.89) or to a new firm (OR 1.59, 95% CI 1.32–1.92) when compared with the reference group over the age of 50 years. Conversely, workers under the age of 30 years were less likely to return to their pre-injury job or to be self-employed. We found a correlation between education level and type of employment. Those who returned to a pre-injury job were more likely to have at least a middle-school education and those who became self-employed were more likely to have at least a high-school education (OR 2.66, 95% CI 1.06–6.67; OR 3.47, 95% CI 0.78–5.40). Those with a college education were more likely to gain employment at a new firm (OR 1.38, 95% CI 0.87–1.61).

Those in the mild disability group appeared relatively more likely to be employed at a different firm (OR 16.22, 95% CI 3.77–23.12), while those with moderate disabilities were relatively more likely to become self-employed (OR 11.02,

Table II. Demographic and injury-related characteristics associated with the type of return-to-work outcomes in multinomial logistic regression analysis (n = 10,809, for whom all information was obtained)

	Return to pre-injury job OR (95% CI)	Self-employment OR (95% CI)	Work at a new firm OR (95% CI)
Gender			
Male	1.93*** (1.66–2.24)	2.83** (1.52–5.27)	1.98*** (1.62–2.43)
Female (reference)	1.00	1.00	1.00
Age			
≤29 years	0.74** (0.62–0.89)	0.41** (0.23–0.77)	1.34*** (1.08–1.67)
30–39 years	1.64*** (1.42–1.89)	1.04 (0.69–1.56)	1.59*** (1.32–1.92)
40–49 years	1.38*** (1.21–1.57)	0.88 (0.60–1.29)	1.19* (1.07–1.42)
≥50 years (reference)	1.00	1.00	1.00
Education			
Elementary school(reference)	1.00	1.00	1.00
Middle-school	1.71*** (1.75–2.98)	2.05 (1.31–9.17)	1.19 (1.02–1.90)
High-school	2.08*** (1.64–2.64)	2.66* (1.06–6.67)	1.19 (0.89–1.58)
College or higher	2.29*** (1.32–2.20)	3.47* (0.78–5.40)	1.38*** (0.87–1.61)
Severity of disability			
Severe (grades 1–3) (reference)	1.00	1.00	1.00
Moderate (grade 4–7)	6.58*** (8.25–22.25)	11.02* (1.69–89.18)	9.33*** (6.60–39.80)
Mild (grade 8–14)	13.55*** (3.97–10.90)	12.27* (1.50–81.17)	16.22*** (3.77–23.12)
Duration of medical care benefits			
≤6 months	1.19*** (1.52–2.42)	1.40 (0.71–2.75)	2.27*** (1.65–3.14)
7–12 months	1.36** (1.09–1.71)	1.20 (0.62–2.32)	1.60** (0.89–1.58)
13–36 months	1.09 (0.87–1.36)	1.19 (0.63–2.25)	1.19 (0.86–1.63)
≥37 months (reference)	1.00	1.00	1.00
Use of additional medical care services			
No	1.08 (0.88–1.34)	0.62 (0.37–1.05)	1.22 (0.92–1.63)
Yes (reference)	1.00	1.00	1.00

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

OR: odds ratio; CI: confidence interval.

95% CI 1.69–89.18) compared with the reference group. Subjects whose medical care benefits lasted 7–12 months were more likely to return to a pre-injury job (OR 1.36, 95% CI 1.09–1.71), while those treated for 6 months or less were the most likely to be employed at a new firm (OR 2.27, 95% CI 1.65–3.14). Neither self-employment nor use of additional medical care services was associated with type of RTW.

DISCUSSION

The results of this study indicate that the type of RTW among injured South Korean workers differs by demographic and injury-related characteristics. First, consistent with previous study findings (12, 14, 21), males were more likely to return to work than females, particularly, to become self-employed. These results may be due in part to employment discrimination based on the Confucian ideology that relegates the role of South Korean women to the home (28). Another possible explanation is that many of the women studied may have been employed in occupations with lower job stability than those of injured men, thus lessening RTW opportunities (14).

Not surprisingly, as found by others, older workers were less likely to return to work (15, 20). One reason could be that injured older people take longer to recover from injuries. Also, for some older workers the illness or injury may provide a push into retirement. Of interest, workers under the age of 30 years appeared to be relatively less likely to return to a pre-injury job, similar to findings in a previous study (21). This may be

associated with the relatively short time that younger workers were employed in the position in which they were injured (14). Workers with higher education were more likely to return to work, which is also consistent with previous findings (14, 15). For injured workers with less education, changing jobs following occupational injury was much more difficult than returning to their pre-injury job or becoming self-employed. This finding was anticipated because South Korea has a highly competitive labour market and many employers require job applicants to have college degrees. Our results have meaningful implications for the rehabilitation process, which was not designed on the basis of the demographic characteristics of injured workers with permanent disabilities.

There were both similarities and differences in the relationships between injury-related factors and RTW outcomes. Consistent with previous results (12, 14, 20), injured workers with less severe disabilities had a higher probability of RTW. The likelihood of becoming self-employed was similar for workers with moderate and mild disabilities, while returning to a pre-injury job or being employed by a new firm was much lower for those in the moderate disability group than for those in the mild disability group. These findings show the need to improve vocational rehabilitation so that injured workers with moderate disabilities as well as those with severe disabilities have a greater chance of employment.

The probability of returning to a pre-injury job was relatively high for those treated for 7–12 months, while the probability of employment at a new firm was the greatest for those whose

treatment lasted 6 months or less. Thus, interventions aimed at RTW need to start as early as possible, particularly for those hoping to be employed at a new firm (14, 15).

The limitation of the present study included the use of administrative data that did not contain many potential RTW-related factors. To provide more meaningful data that can be used to develop more substantive RTW programmes, future studies need to consider workplace and psycho-social characteristics of injured workers in South Korea. Also, although RTW outcomes were dually abstracted for the entire study sample using administrative data and telephone interview results, the type of RTW was not known for a portion of the study subjects. Despite these limitations, the large sample size and the comprehensiveness of the data increase the likelihood that our findings are generalizable.

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