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Do Health Service Use and Return-to-Work Outcomes Differ with GPs' Injured-Worker Caseload?

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Abstract
Purpose To determine whether healthcare use and return-to-work (RTW) outcomes differ with GPs' injured-worker caseload. *Methods* Retrospective analyses of the Compensation Research Database, which captures approximately 85% of all injured worker claims in Victoria, Australia was conducted. Four injured-worker caseload groups were examined that represented the 25th, 50th, 75th, and 100th percentiles of claimants seen per GP over the 8-year study period (2003–2010): (i) 1–13 claimants; (ii) 14–26 claimants; (iii) 27–48 claimants; and (iv) 49+ claimants (total claims, $n = 124{,}342$; total GPs, $n = 9748$).The characteristics of claimants in each caseload group, as well as the influence of caseload on three outcomes relevant to RTW (weekly compensation paid, work incapacity days, medical-and-like costs), were examined. *Results* Distinct profiles for high versus low caseload groups emerged. High caseload GPs treated significantly more men in blue collar occupations and issued significantly more 'alternate duties' certificates. Conversely, low caseload GPs treated significantly more women in white collar occupations, predominantly for mental health injuries, and issued significantly more 'unfit-for-work' certificates. Few significant differences were found between the two intermediate GP caseload groups. High caseload was associated with significantly greater medical-and-like costs, however, no caseload group differences were detected for weekly compensation paid or duration of time-off-work. *Conclusions* Training GPs who have a low injured-worker caseload in workers' compensation processes, utilising high caseload GPs in initiatives involving peer-to-peer support, or system changes where employers are encouraged to provide preventive or rehabilitative support in the workplace may improve RTW outcomes for injured workers.

Keywords General practice · Return to work · Workers' compensation

Introduction

Australia is the seventh safest place in the world to work [1]. Nevertheless, a total of 117,815 serious workers' compensation claims were lodged in 2012–13, which represents an incidence rate of 11.1 serious claims per 1000 employees [2]. The direct and indirect cost of work-related injury and illness is estimated to be $60.6 billion, which is primarily borne by the individual (74%), then the community (21%) and employers (5%) [2]. Return-to-work (RTW) is a critical recovery outcome for injured employees as it confers multiple *manifest* (financial), *latent* (e.g., status, time structure, collective purpose), and *health* benefits [3–5]—all of which are diminished by unemployment [4, 6].

In Australia, all injured worker compensation claims must be medically certified. Most claims are initially certified by general practitioners (GPs) who treat the injured worker and certify RTW capacity [7]. Therefore, GPs act as the gatekeepers to workers' compensation and disability benefits for injured workers [8].

Although GPs play a pivotal role in recovery and RTW [9, 10], fitness-for-work certification requires additional non-clinical knowledge and experience. Non-clinical factors that influence RTW assessments include divergent views on GPs' role in RTW, knowledge of claimants' work environment,

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training in sickness certification, guidelines on certification and occupational health, and the additional administrative requirements of dealing with the compensation system [7, 9–12].

Specialised training in RTW assessment is currently not available within the workers' compensation setting in Australia; therefore, it is difficult to ascertain if non-clinical knowledge and experience has an influence on RTW outcomes in injured workers. However, GPs' injured-worker caseload could be used as a proxy for experience/skill. In the hospital setting, systematic reviews of current evidence reported that higher-volume caseloads are associated with significantly better patient healthcare outcomes (e.g., mortality, complications, hospital stay length) [13, 14], even after risk adjustment in population-based studies (e.g., age, gender, discharge diagnoses) [15]. In contrast, physicians who treated only one case per annum had markedly worse patient clinical outcomes. Possible reasons for this difference may be that physicians who treat a high volume of patients develop more effective skills or that physicians who achieve better patient outcomes attract more referrals, resulting in a higher caseload [15]. Nevertheless, the magnitude of the association between caseload and patient outcome varied widely, depending on medical condition, procedure and speciality [13, 15].

Although these systematic reviews examined clinical outcomes in a hospital setting, we sought to determine if there is a similar association between GPs' caseload of injured workers and healthcare use and RTW outcomes. Consequently, we analysed a compensation database to:

1. Identify GPs' injured-worker caseload level (i.e. number and characteristics of injured workers).
2. Examine whether healthcare use and RTW outcomes of claimants differed according to their GPs' injured-worker caseload (ranging from low to high).

Methods

Data

A retrospective analysis of administrative data held in the Compensation Research Database (CRD) [16] was undertaken. The CRD contains de-identified case-level data furnished by the Victorian Workcover Authority (VWA) for the period 1986–2015; however, medical certificate data was not routinely captured by the VWA until 1st January 2003. At the time of analysis, the CRD contained complete information for all workers' compensation claims up to 31st December 2010. Consequently, data for the 8-year period (1 January 2003–31 December 2010), which involved extracting a total of 207,949 claims for working age adults (15–65 years of age), were analysed for this study.

Exclusion Criteria

Claims were excluded if (i) they were for healthcare expenses only (income replacement is not paid for claims that fall below the 10-day work absence threshold) ($n=78{,}086$); (ii) the certificates were written by a non-GP health practitioner ($n=5439$), or (iii) they contained logical errors (e.g., certificate pre-dated injury) ($n=82$). Thus, a total of 124,242 claims were included in the analyses, representing 60% of total number of extracted claims.

Data Classification

Medical certificates for the included claims were classified into three groups: 'unfit-for-work' ($n=92{,}134$, 74% of certificates), 'alternate duties' ($n=28{,}293$, 23%), or 'fit-for-work' ($n=3915$, 3%).

Caseload Groups

Four injured-worker caseload groups were identified based upon the number (25th, 50th, 75th, and 100th percentiles) of claimants seen per GP over the study period. Groups ranged from low caseload (Group 1) to high caseload (Group 4) (Table 1).

Main Outcome Measures

Three outcomes relevant to RTW were measured: (i) medical-and-like-costs, (ii) duration of time-off-work, and (iii) weekly compensation paid. Duration of time-off-work (in days) and weekly compensation paid (2010 dollars) measure two intersecting aspects of RTW: the first outcome directly measures non-labour force participation while the second outcome measures the cost of non- or partial labour force participation. Although not a RTW outcome, medical-and-like costs (2010 dollars) represent healthcare use, which has the objective of RTW.

Ethics approval for the study was obtained from the Monash University Human Research Ethics Committee.

Table 1 Classification of the four injured-worker caseload groups

Group	Claimants/GP	GPs, *N* (%)	Claims, *N* (%)
1 (low caseload)	1–13 (25 pct)	6824 (70)	30,814 (24.8)
2	14–26 (50 pct)	1638 (16.8)	31,151 (25.1)
3	27–48 (75 pct)	917 (9.4)	31,583 (25.4)
4 (high caseload)	49+ (100 pct)	369 (3.8)	30,794 (24.8)
Total		9748 (100)	124,342 (100)

Statistical Analyses

Injured-Worker Caseload Groups

Cross-tabulations were performed to describe each of the four injured-worker caseload groups according to gender, age, occupation, injury/illness, employer size, and medical certification (type and median duration). Group differences for categorical variables were examined using Chi square analyses with Bonferroni adjustment. Group differences in median duration of certificates were examined using the Kruskal–Wallis test and significant findings were followed up with separate Mann–Whitney U-tests. All analyses were performed with SPSS statistical software (version 21.0; IBM, New York, United States).

Health Service Use and Return-to-Work Outcomes

Means (standard deviations) and medians (interquartile range) were calculated for all three outcome variables. The differences among the four injured-worker caseload groups were analysed using the Kruskal–Wallis test and significant findings were followed up with separate Mann–Whitney U-tests. The median of health service use and RTW outcomes were compared between caseload groups with a Simultaneous Quantile regression model using STATA statistical software (SE 12.0; StataCorp, Texas, USA).

Results

Identification and Description of the Four Injured-Worker Caseload Groups

Descriptive Statistics

A total of 9748 GPs wrote initial medical certificates for 124,342 claims over the 8-year study period (Table 1). However, injured-worker caseload varied substantially amongst GPs. The majority of GPs (70%) treated fewer than 13 injured workers each (low caseload group) while a minority of GPs (3.8%) treated more than 49 injured workers each (high caseload group). The demographic characteristics of claimants in the four injured-worker caseload groups are shown in Table 2.

Group Differences

Relative to Group 1 (low caseload), Group 4 (high caseload) comprised significantly more male claimants, in the 25–34 age group, from blue-collar occupations (i.e. labourers, machinery operators and drivers, technicians and trades) and medium-sized organisations. Injuries were mainly musculoskeletal (MSK) in nature from an external cause (i.e. fractures and 'other traumatic injury'). These claimants were also issued with significantly more 'alternate duties' certificates (Table 2).

Conversely, relative to Group 4 (high caseload), Group 1 (low caseload) comprised significantly more female claimants in middle/late adulthood (45–54 and 60–64 age groups), from white-collar occupations (i.e. managers, professionals, sales workers and clerical/admin workers) and small-sized and government organisations. There were significantly more mental health conditions and back pains and strains, and these claimants were issued significantly more 'unfit-for-work' and 'fit-for-work' certificates (Table 2).

Although Group 3 GPs treated a higher volume of claimants than Group 2 GPs, few significant group differences in claimants' characteristics were found. Specifically, there were no differences in gender, age, the majority of occupations (6/8) and injury types (4/6), employer size (small and medium-sized organisations only), and the type of medical certificate issued (Table 2). Thus, unlike the high versus low caseload groups, these two intermediate groups were more similar than different. Although medical certification did not differ between the two intermediate groups, Group 3 GPs issued significantly more 'unfit-for-work' and significantly fewer 'fit-for-work' certificates (relative to Groups 1 and 4) and also treated significantly more MSK injuries and diseases than any of the other caseload groups.

Health Service Use and RTW Outcomes for the Four Injured-Worker Caseload Groups

Kruskal–Wallis analyses revealed (caseload) group differences in the medians for medical-and-like costs [χ^2 (3, $N = 124{,}342$) = 414.81, $p < 0.001$], but not for adjusted weekly compensation [χ^2 (3, $N = 124{,}342$) = 8.155, $p = 0.043$], or duration of time-off-work [χ^2 (3, $N = 124{,}342$) = 3.189, $p = 0.363$]. Pairwise comparisons with Mann Whitney U-tests revealed that Group 4 (high caseload) incurred significantly greater medical costs than Groups 1, 2 and 3 (Table 3).

Discussion

Our study sought to determine whether healthcare use and return-to-work (RTW) outcomes differed with GPs' injured-worker caseload. The overwhelming majority of GPs had a low caseload of injured workers (1–13 claimants over the 8-year study period) while a very small minority had a high caseload (49+ claimants). Distinct claimant profiles for the high versus low caseload group emerged, but not for the two intermediate groups. Additionally, medical certification differed according to

Table 2 Comparison of column proportions for the four injured-worker caseload groups for different claimant characteristics

	Number of certificates				χ^2	φ
	Group 1 (Low caseload)	Group 2	Group 3	Group 4 (High caseload)		
Gender						
Male	18289a (20053.3)	19899b (20272.6)	20470b (20553.8)	22262c (20040.3)	1170.501**	0.097
Female	12525a (10760.7)	11252b (10878.4)	11113b (11029.2)	8532c (10753.7)		
Age group (years)						
15–19	850b (890.2)	806a (899.9)	895a (912.4)	1041b (889.6)	209.730**	0.041
20–24	2331a,b (2314.9)	2220b (2340.2)	2291b (2372.6)	2499b (2313.4)		
25–34	5839a (5733.5)	5517b (5796.2)	5631b (5876.6)	6149c (5729.8)		
35–44	7910a (7898.9)	7929a (7985.3)	8099a (8096)	7936a (7893.8)		
45–54	8959a (8987.1)	9373b (7985.3)	9349a,b (9211.3)	8584c (8981.2)		
55–59	3090a (3189.2)	3416b (3224)	3443b (3268.7)	2920a (3187.1)		
60–64	1695a (1664.3)	1734a (1682)	1740a (1705.9)	1547b (1663.3)		
65+	140a (136.1)	156a (137.5)	135a (139.4)	118a (136.0)		
Major occupation						
Managers	1896a (1639.8)	1698b (1656.7)	1656b (1679.7)	1363c (1637.7)	1828.688**	0.121
Professionals	4191a (3228.1)	3513b (3263.4)	3181c (3308.6)	2141d (3226.0)		
Technicians and trades	6268a (6729.2)	6653b (6802.8)	6733b (6897.1)	7500c (6724.8)		
Community and personal services	4533a (4184.4)	4537a (4230.1)	4434a (4288.8)	3381b (4181.7)		
Clerical and admin	1442a (1178.1)	1209b (1191.0)	1181b (1207.5)	922c (1177.4)		
Sales workers	1098a (1010.6)	1073a (1021.6)	1078a (1035.8)	829b (1009.9)		
Machinery operators and drivers	4511a (5438.3)	5094b (5497.8)	5635c (5574.1)	6705d (5434.8)		
Labourers	6875a (7406.5)	7374b (7487.5)	7685b (7591.3)	7953c (7401.7)		
Injury type						
Fractures	3146a (2997.8)	2724b (3030.6)	2660b (3072.7)	3567c (2995.9)	1662.225**	0.116
MSK injuries and diseases	11822a (12395.3)	12809b (12530.8)	13399c (12704.6)	11988a (12387.2)		
Other traumatic injury	4632a (4820.8)	4289b (4873.5)	4213b (4941.1)	6319c (4817.6)		
Back pains and strains	5094a (5049.3)	5280a (5104.5)	5466a (5175.3)	4535b (5046.0)		
Mental disorders	3878a (3135.9)	3556b (3170.2)	3208c (3214.1)	2012d (3133.8)		
Other diseases	2242a (2415.0)	2493b,c (2441.4)	2637c (2475.2)	2373a,b (2413.4)		

Table 2 (continued)

	Number of certificates				χ^2	φ
	Group 1 (Low caseload)	Group 2	Group 3	Group 4 (High caseload)		
Employer size						
Small	8503a (8217.3)	8328a,b (8307.2)	8187b (8422.4)	8141b (8212.0)	391.145**	0.056
Medium	12047a (12709.8)	12677b (12848.8)	13154b (13027.0)	13409c (12701.5)		
Large	7075a,b (7077.1)	6960b (7154.5)	7347a (7253.8)	7176a (7072.6)		
Government	3189a (2809.7)	3186a (2840.5)	2895b (2879.9)	2068c (2807.9)		
Certificate type						
Unfit-for-work	23048a (22832.3)	23502a,b (23082.0)	23926b (23402.1)	21658c (22817.5)	370.865**	0.055
Alternate duties	6653a (7011.5)	6690a (7088.2)	6788a (7186.5)	8162b (7006.9)		
Fit-for-work	1113a (970.2)	959b,c (980.8)	869c (994.4)	974b (969.6)		

Numbers in brackets denote Bonferroni adjustment coefficients derived from ANOVA group comparisons

For each variable, columns with the same letter denote caseload groups whose column proportions do not differ significantly from each other at the 0.05 level

Caseload Group 1 = 1–13 claims/provider; Caseload Group 2 = 14–26 claims/provider; Caseload Group 3 = 27–48 claims/provider; Caseload Group 4 = 49 + claims/provider

MSK musculoskeletal

$^{**}p < 0.001$

Table 3 Description of healthcare use and RTW outcomes in the four injured-worker caseload groups

Category (*N*, certificates)	Group 1 ($n = 30{,}814$)	Group 2 ($n = 31{,}151$)	Group 3 ($n = 31{,}583$)	Group 4 ($n = 30{,}794$)	Total ($N = 124{,}342$)
Medical-and-like costs (AUD) Median (IQR)	3699 (644–10,653)	3594 (598–10,643)	3701 (682–10,664)	4578 (1209–12,110)	3878 (752–11,022)
Duration of time-off-work (days) Median (IQR)	54 (24–160)	53 (24–158)	52 (24–154)	52 (24–150)	53 (24–155)
Weekly compensation (AUD) Median (IQR)	5459 (1764–17,376)	5459 (1801–17,611)	5256 (1739–17,133)	5452 (1859–16,905)	5405 (1790–14,246)

AUD Australian dollars

caseload. Relative to the high caseload group, low caseload GPs issued significantly more 'unfit-for-work'. In contrast, high caseload GPs issued significantly more 'alternate duties' certificates. Among the outcome variables, claimants in the high caseload group incurred significantly more medical-and-like costs than any other group. However, caseload volume did not influence the two RTW outcomes—duration of time-off-work or weekly compensation paid.

Caseload Identification

Injured-worker caseload varied considerably amongst GPs. Around 70% of GPs treated fewer than 13 injured workers each (low caseload group) while only 4% of GPs treated more than 49 injured workers each (high caseload group). This finding may reflect commercial, societal and geographic variation in GP practice clientele. Practitioners located in industrial neighbourhoods or locations with a

higher proportion of residents in high risk industries (e.g., agriculture and manufacturing) may have disproportionately more workers' compensation claims. It is also possible that GPs with specialist interests in occupational health or those that actively market their services to employers and workers' compensation insurers may have a higher caseload.

Also, each of the four caseload groups differed substantially in volume (i.e. number of claimants per GP), with distinct profiles for the lowest (Group 1) and highest (Group 4) caseload groups only. The caseload profiles for these two groups were remarkably consistent in terms of associations among claimant characteristics. For example, the low caseload group comprised significantly more females, mental health claims (MHCs), white collar occupations, older age employees, workers from small organisations, and 'unfit-for-work' certificates compared with the high caseload group. These findings are supported by other research which found that women are more likely to make MHCs and that MHCs are more likely to occur in white collar occupations (e.g. Managers/Professionals) and among older employees who are more likely to work in these occupations [17]. Previous studies have also shown that the overwhelming majority of MHCs (94%) result in unfit-for-work certification [8, 18]. The significantly greater number of 'unfit-for-work' certificates may reflect low caseload GPs' limited knowledge of the injured worker's workplace and possible alternative or modified duties, which may be linked to their minimal engagement with employers.

In contrast, high caseload GPs (i.e. the ~4% of GPs who certify 25% of all workers' compensation claims) have greater interaction and experience with treating claimants whose characteristics were associated with physical injuries (e.g., males, blue collar occupations) [18]. This may be explained, in part, by the fact that high caseload GPs often have a special interest in occupation health, are located close to industrial areas, and are engaged directly by employers, all of which would influence their caseload. Accordingly, the lower number of claims for MHCs in the high caseload group may be due to injured workers' reluctance to report mental health problems to GPs who are closely associated with their employer or the relatively lower prevalence of MHCs in workers in industrial occupations.

Medical Certification

In this study, caseload volume influenced medical certification, which is likely to be related to GPs' experience with the compensation system and injury type. Specifically, GPs with the highest injured-worker caseload—and, thus, the greatest experience with the workers' compensation system—issued the largest proportion of 'alternate duties' certificates. This result is consistent with other research which found that GPs who are more experienced with workers' compensation had higher odds of issuing 'alternate duties' certificates [8, 19]. In terms of injury type, Group 3 GPs—who treated the highest proportion of claimants with MSK injuries/diseases—also issued the highest proportion of 'unfit-for-work' certificates, which is consistent with research in the UK on GP sickness certification for MSK conditions [11]. Similarly, low caseload GPs issued significantly more 'unfit-for-work' certificates and significantly fewer 'alternate duties' certificates, relative to high caseload GPs. This observation may be due to the fact that low caseload GPs treated significantly more claimants with MHCs or that MHCs are more complex and, therefore, difficult to treat [20]. Most MHCs result in 'unfit-for-work' certification both in Victoria, Australia [8] and the UK [11] and are also associated with decreased odds of receiving an 'alternate duties' certificate [8, 19].

Healthcare Service Use and RTW Outcomes

Claimants in the high injured-worker caseload group incurred significantly greater medical-and-like costs than the other three caseload groups. This result is likely to be related to a number of factors, which include GPs' knowledge and experience of compensation processes that affect healthcare use and claimant characteristics [1, 7]. The former is related to caseload volume while the latter is related to caseload diversity. GPs with a higher caseload of injured workers—and thus greater experience with the workers' compensation scheme—are more likely to be aware of medical services covered by the scheme and refer their patients to these services, resulting in higher medical-and-like costs. Claimant characteristics may also have influenced healthcare costs. Relative to the low caseload group, the high caseload group comprised significantly more males (whose rate of claims for serious work-related injury/disease is higher than females [1]) and employees from predominantly blue collar occupations (i.e. technicians and trades; machinery operators and drivers; labourers), which have consistently recorded the highest incidence of serious injury (which often results in hospitalisation) above the 'all occupations' rate for many years [1]. Serious injuries require more intensive medical treatment; therefore, they are more expensive to treat [21].

Our study also found that injured-worker caseload did not influence either of the RTW outcomes (ie, weekly compensation paid and duration of time-off-work). GPs' lack of experience with the (non-clinical) task of assessing work capacity as well as lack of knowledge of patients' workplace demands and their relationship to functionality may account for these non-significant results [9, 22]. Other job-related factors, such as the availability of alternative employment and modified duties, which are beyond GPs' control, can also influence duration of time-off-work and associated income replacement costs [9]. However, one of the strongest predictors of RTW for injured workers is their fear of (re)

injury [23, 24]. Our qualitative study, which explored factors that influence RTW work behaviour through interviews with key stakeholders in the RTW process (GPs, injured workers, employers, case managers), found that injured workers weigh the risk of (re)injury against the perceived benefits of RTW [25]. Fear of (re)injury was also expressed by employers and insurance case managers, which often contributed to their unwillingness to accept injured workers back at work [25]. Moreover, injured workers' beliefs that sufficient measures have been taken to prevent or minimise the risk of (re) injury can also influence the RTW process [25]. Consequently, it appears that GPs may have little influence over the non-clinical aspects of the RTW process. In contrast, the significant result found for medical-and-like costs likely reflects GPs' field of expertise and the direct control they have over healthcare use via referrals.

Strengths and Limitations

A particular strength of the present study was the use of population-based data, which captured workers' compensation claims from a wide range of industries and occupations that were managed by GPs from a diverse range of healthcare practices. However, this data covered only accepted compensation claims, which account for 19% of all work-related injuries in Victoria [26]. One data classification issue that may limit comparison with other (international) studies was the use of injury categories identified by GPs as the most common, which resulted in either the formation of heterogeneous categories (e.g. 'other traumatic injury') or the parsing of traditionally homogeneous categories (e.g., 'back pains/strains' and 'musculoskeletal injuries/diseases').

Recommendations and Future Research

Training in workers' compensation processes, particularly for the majority of GPs who have a low injured-worker caseload, could improve RTW outcomes for patients. Due to its extensive coverage, the present study could be used as a benchmark to evaluate the effect of GP training and education initiatives on medical certification and assessment of RTW for compensable injuries. Our results suggest that training packages could usefully target specific injured-worker profiles for GPs with different injured-worker caseloads. Future studies on the effect of injured-worker caseload on RTW outcomes that adjust for casemix are also needed. Our results suggest that categorising injured-worker caseload groups into low (25th percentile), medium (50th and 75th percentiles), and high (100th percentile) caseloads may provide the most useful comparisons.

Additionally, there may be some value in utilising the experience and expertise of higher caseload GPs as a resource for other GPs, especially when there is reluctance among GPs to treat patients with compensable injuries because of financial and time constraints and the complexities associated with compensable injury management [27]. Academic detailing is one possible intervention that would involve a GP who is experienced with the RTW process providing face-to-face education either at the individual or practice level. Establishing communities of practice could also be valuable, providing a forum for the exchange of best practice tips and feedback from experts and other stakeholders. Providing this support would give GPs the confidence to engage in work-related conversations with injured workers to increase the chances of RTW.

System changes may also be required to support injured workers' RTW. As described in our previous study, RTW outcomes can be influenced by fear of (re)injury [25]. This could be addressed by placing the onus on employers to provide preventative or rehabilitative support, which could be subsidised by the government [28]. In such a system, employers could engage occupational health services to help injured workers manage their condition more effectively in the workplace.

Conclusion

Although GPs are generalists who treat a wide variety of conditions [29], the present study found specific claimant profiles for GPs with high or low injured-worker caseloads, which has implications for patients and insurers seeking the most relevant healthcare providers. High caseload GPs treated significantly more men in blue collar occupations and issued significantly more alternate duties certificates. Conversely, low caseload GPs treated significantly more women in white collar occupations, predominantly for mental health injuries, and issued significantly more unfit-for-work certificates. Training GPs in workers' compensation processes, particularly those who have a low injured-worker caseload, utilising high caseload GPs in initiatives involving peer-to-peer support, or system changes where employers are required to improve the support that they provide in the workplace may improve RTW outcomes for injured employees.

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Compliance with Ethical Standards

Conflict of interest DM and BB have received funding from ISCRR for subsequent research studies. RR and AC were employed by ISCRR

at the time the study was conducted. MO'H and AK declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Monash University Human Research Ethics Committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

1. Safe Work Australia. Key work health and safety statistics, Australia, 2014. Canberra, ACT: Safe Work Australia; 2014.
2. Safe Work Australia. Key work health and safety statistics, Australia, 2015. Canberra, ACT: Safe Work Australia; 2015.
3. Paul K, Geithner E, Moser K. Latent deprivation among people who are employed, unemployed, or out of the labor force. J Psychol. 2009;143(5):477–491.
4. Bartley M, Sacker A, Clarke P. Employment status, employment conditions, and limiting illness: prospective evidence from the British household panel survey 1991–2001. J Epidemiol Community Health. 2004;58(6):501–506.
5. Waddell G, Burton A. Is work good for your health and well-being? Norwich: TSO; 2006.
6. Thomas C, Benzeval M, Stansfeld A. Employment transitions and mental health: an analysis from the British household panel survey. J Epidemiol Community Health. 2005;59(3):243–249.
7. Kosny A, MacEachen E, Ferrier S, Chambers L. The role of health care providers in long term and complicated workers' compensation claims. J Occup Rehabil. 2011;21(4):582–590.
8. Collie A, Ruseckaite R, Brijnath B, Kosny A, Mazza D. Sickness certification of workers compensation claimants by general practitioners in Victoria, 2003–2010. Med J Aust. 2013;199(7):480–483.
9. Mazza D, Brijnath B, Singh N, Kosny A, Ruseckaite R, Collie A. General practitioners and sickness certification for injury in Australia. BMC Fam Pract. 2015;16(100):1–9.
10. Cohen D, Aylward M, Rollnick S. Inside the fitness for work consultation: a qualitative study. Occup Med. 2009;59(5):347–352.
11. Wynne-Jones G, Mallen C, Main C, Dunn K. Sickness certification and the GP: what really happens in practice? Fam Pract. 2010;27(3):344–350.
12. Cohen D, Marfell N, Webb K, Robling M, Aylward M. Managing long-term worklessness in primary care: a focus group study. Occup Med. 2010;60(2):121–126.
13. Chowdhury M, Dagash H, Pierro A. A systematic review of the impact of volume of surgery and specialization on patient outcome. Br J Surg. 2007;94(2):145–161.
14. Gandjour A, Bannenberg A, Lauterbach K. Threshold volumes associated with higher survival in health care. A systematic review. Med Care. 2003;41(10):1129–1141.
15. Halm E, Lee C, Chassin M. Is volume related to outcome in health care? A systematic review and methodologic critique of the literature. Ann Intern Med. 2002;137(6):511–520.
16. Prang KH, Hassani-Mahmooei B, Collie A. Compensation Research Database: population-based injury data for surveillance, linkage and mining. BMC Res Notes. 2016;9(1):456.
17. Safe Work Australia. Work-related mental disorders profile, 2015. Canberra, ACT: Safe Work Australia; 2015.
18. Safe Work Australia. Australian work-related injury experience by sex and age, 2009–10. Canberra, ACT: Safe Work Australia; 2012.
19. Ruseckaite R. Unfit for work or alternate duties: what predicts the type of medical certificate for injured workers in Victoria, Australia [Abstract]. Int J Disabil Manag. 2014;9(e6):1.
20. Brijnath B, Mazza D, Singh N, Kosny A, Ruseckaite R, Collie A. Mental health claims management and return to work: qualitative insights from Melbourne, Australia. J Occup Rehabil. 2014;24(4):766–776.
21. Safe Work Australia. The cost of work-related injury and illness for Australian employers, workers and the community: 2012–13. Canberra, ACT: Safe Work Australia; 2015.
22. Kiesslling A, Arrelov B. Sickness certification as a complex professional and collaborative activity—a qualitative study. BMC Public Health. 2012;12(1):702.
23. Iles RA, Davidson M, Taylor NF. Psychosocial predictors of failure to return to work in non-chronic non-specific low back pain: a systematic review. Occup Environ Med. 2008;65(8):507–517.
24. Storheim K, Brox JI, Holm I, Bo K. Predictors of return to work in patients sick listed for sub-acute low back pain: a 12-month follow-up study. J Rehabil Med. 2005;37(6):365–371.
25. Bunzli S, Singh N, Mazza D, Collie A, Kosny A, Ruseckaite R, et al. Fear of (re)injury and return to work following compensable injury: qualitative insights from key stakeholders in Victoria, Australia. BMC Public Health. 2017;17(1):313.
26. Australian Bureau of Statistics. Year Book Australia, 2012. Catalogue 1301.0. Canberra, ACT: Australian Bureau of Statistics (ABS); 2012.
27. Brijnath B, Mazza D, Kosny A, Bunzli S, Singh N, Ruseckaite R, et al. Is clinician refusal to treat an emerging problem in injury compensation systems? BMJ Open. 2016;6(1):e009423.
28. Department for Work and Pensions and Department of Health. Work, health and disability green paper: improving lives. London: UK Government; 2017.
29. Love T, Dowell A, Salmond C, Crampton P. Quality indicators and variation in primary care: modellling GP referral patterns. Fam Pract. 2004;21(2):160–165.