Supervisors' perceptions of organizational policies are associated with their likelihood to accommodate back injured workers

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Abstract

Background—Low back pain (LBP) is a major concern among North American workplaces and little is known regarding a supervisors decision to support job accommodation for workers with LBP. The extent to which supervisors are included in a company's effort to institute disability management policies and practices and workplace safety climate are two factors that may influence a supervisor's decision to accommodate workers with LBP.

Objective—Determine the association between supervisors' perceptions of disability management policies, corporate safety culture and their likelihood of supporting job accommodations for workers with LBP.

Methods—We conducted a cross-sectional study of supervisors (N = 796) recruited from a non-random, convenience sample of 19 Canadian and US employers. The outcome was supervisors' likeliness to support job accommodation and the exposure was global work safety culture and disability management policies and practices. A multivariable generalized linear modeling strategy

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was used and final models for each exposure were obtained after assessing potential effect modifiers and confounders.

Results—796 eligible supervisors from 19 employers participated. Disability management policies and practices were positively associated with supervisors' likeliness to accommodate ($\beta = .19$; 95% CI: .13; .24) while no significant association was found between corporate safety culture ($\beta = -.084$; 95% CI: $-.19$; .027) and supervisors' likeliness to accommodate.

Conclusions—Employers should ensure that proactive disability management policies and practices are clearly communicated to supervisors in order to improve job modification and return to work efforts.

Keywords

return to work; supervisor; accommodation; cross-sectional; back; injuries

INTRODUCTION

Low back pain (LBP) is a prevalent concern in North American workplaces with an estimated 38% of workers submitting claims at some point during their career [1]. This high prevalence costs Canadians an estimated 8 billion dollars per year [2]. Total costs of LBP in the United States have not been completely investigated [3], but the estimated economic cost of common musculoskeletal conditions in the US (including LBP) has been estimated between US\$45 – 61 billion in terms of lost productivity alone [4, 5]. Based on these figures, LBP has been identified as one of the leading causes of activity limitation, decreased productivity and sickness absence in North American workplaces [6]. The lengthy duration of disability following a LBP claim has a significant impact on LBP sufferers, their employers and healthcare systems, and to society as a whole [7]. The costs of LBP are expected to increase, as a small percentage of long-term LBP claims account for 79–96% of total costs [7] and more and more LBP claims in North America are exceeding one year in duration [8].

Return to work (RTW) efforts use workplace interventions like targeted accommodation to decrease the length of LBP claims and improve worker satisfaction and productivity during the RTW process [9, 10]. Workplace accommodation could involve decreased work hours, changes in equipment used or revised duties, and other changes to work organization or physical job demands. Workplace accommodation has been one of the most successful types of workplace interventions aimed at reducing the duration of LBP claims, decreasing costs and increasing job retention [11, 12]. Williams and colleagues completed a systematic review that examined numerous workplace rehabilitation programs and determined that modified work was the most successful at increasing early RTW, decreasing the number of back injuries and reducing overall work disability [12]. Another systematic review completed by Franche and colleagues found that workplace accommodation and early contact with the disabled worker following a LBP injury reduces the overall length of workplace disability [13].

An important aspect of the RTW process is the role played by the workplace supervisor [14, 15]. A supervisor can provide workplace accommodation, ensure timely access to medical care, communicate messages of support and improve the RTW process as a whole [14]. A supervisor who communicates with the injured worker in a positive manner using encouragement and positive messages can greatly decrease the duration of disability [15, 16]. Conversely, a supervisor who is perceived to communicate in a negative manner can impede the RTW process. Research has shown that negative supervisor actions are related to longer-duration claims among workers that they supervise [17]. However, little is known about the factors that influence a supervisor's decision to provide modified work. There are several factors that may play key roles in decreasing the cost of LBP disability and increasing the health and wellness of workers. Two such factors are supervisors' perceptions of disability management policies/practices and the corporate safety climate.

It is known that the extent to which supervisors have been included in the company's efforts to institute proactive disability management policies and practices serves to minimize disability in the workplace [18]. Employees' perceptions of disability management policies and practices have been shown to be a significant predictor of illness and injury occurrence and successful return to work [19]. Strong disability management policies and practices have been shown to decrease the number of injuries that occur in both hospital and community settings [18–20]. Disability management policies may provide guidance to assist supervisors through the return to work process. Yet, the association between disability management policies and practices and the likelihood that workplace accommodation will be offered by supervisors remains unknown.

Corporate safety climate is another potential factor influencing supervisor efforts to facilitate job modifications. Safety climate refers to the shared perceptions of employees and supervisors about the overall safety of their work environment [21]. Corporate safety climate has been identified as one of many factors crucial in the duration of disability following injury and in the return to work process [22]. In addition, poor perceptions of safety climate are associated with the development of a workplace injury or illness [23]. Safety climate has been shown to be significantly associated with job stress, job satisfaction and the rate of turnover in companies [23]. A supervisor's perception of the corporate safety climate may influence the effort he or she exerts in finding appropriate accommodations for back injured workers. Yet, the association between corporate safety climate and the likelihood that workplace accommodation will be offered by supervisors has not been tested.

More research is necessary to evaluate the various factors that may play key roles in the decision-making process of the supervisor so that the costs of LBP disability can be decreased and the health and wellness of workers can be improved. Understanding how supervisors' perceptions of disability management policies and practices and corporate safety climate influence supervisors' likelihood to provide work accommodation is an important aspect in the future development of early RTW interventions. The goal of this study is to determine the association between supervisors' perceptions of disability management policies and practices, corporate safety climate and the decision to support work accommodation for workers with LBP. We hypothesize that both supervisor

perceptions of disability management policies and practices and corporate safety climate would be associated with supervisors' likelihood of supporting job accommodation.

PATIENTS & METHODS

Study Design & Participants

This study was completed as part of a larger study on supervisors' perspectives on workplace accommodation. Detailed methods have been described in a previous publication [24]. Briefly, a cross-sectional study design was used to survey supervisors using a questionnaire based on a case vignette (representative of the job demands typical from the supervisor's workplace) of a worker with LBP. Participating employers were a non-random convenience sample drawn from existing research contacts, past collaborations and institutional ties. All supervisors from participating employers were invited to participate and were only included in analyses if they supervised at least one employee, were 18 years of age or older, and spoke English. High-level supervisors who supervised one or more lower level supervisors were included in the study.

The case vignette is an established and validated method to study the decision making process of health problems and outcomes [25]. Case vignettes have been used in LBP research to evaluate physicians and their adherence to evidence based medicine and management of LBP guidelines [25]. Eight case vignettes were used for this study, with each specific case vignette having a unique combination of three variables: the gender of the worker, the location of injury (home or work) and the number of prior work absences (0 or 30 days lost work time). Participating supervisors were randomly assigned to one of the case vignettes and instructed to choose one position that is typical of a job they supervise and respond to the survey questions based on the characteristics of that job.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Ethical approval was obtained from the Liberty Mutual Institutional Review Board and the University Health Network Research Ethics Board. Informed consent was obtained from all participants before being included in the study.

Primary Study Measures

Job Accommodation Scale (JAS): The primary outcome for this study was supervisors' likelihood of supporting job accommodation and was measured with the Job Accommodation Scale (JAS). The JAS is a 21-item, self-reported measure used to assess the likelihood that job accommodations may be supported by a supervisor in the workplace [26]. The JAS has been validated and shown to have good reliability and internal consistency (Cronbach's α equal to 0.85) [26]. The JAS characterizes job accommodations related to modifying a workers' physical workload, the worker environment, the work schedule, finding different routines and organizing extra workplace assistance. For each specific item on the JAS, supervisors indicated their likelihood to accommodate using that particular type of accommodation. The JAS score ranges from "1" (very unlikely) to "4" (very likely) and

includes a response of “not applicable” if the measure of accommodation is not applicable to that workplace.

The final JAS score for each supervisor is between 1 and 4 and is determined by dividing the sum of all response by the total number of questions answered. Total scores were converted to percentages to address the issue of incomplete responses and ensure comparability between supervisors. Participating supervisors were instructed to indicate their level of support for each JAS item given: 1) the case vignette scenario; 2) the physical job demands of the position; and 3) the usual practices in their workplace including the demands of their supervision. Corporate Safety Climate: Corporate safety climate refers to employees’ perceptions about the overall safety of their workplace [21]. Supervisors’ perception of global work safety climate was measured using the 6-item validated Global Work Safety Climate (GWSC) scale [21]. The GWSC instrument has been validated for use with supervisors (Cronbach’s α equal to 0.78) [21]. GWSC scores range from 1 to 4, with a higher score indicating lower levels of safety culture in the workplace.

Disability Management Policies—Disability management policies and practices refer to the various strategies used to minimize disability in a workplace [18]. Disability management policies and practices were measured using 13-items from the Organizational Policies and Practices (OPP) instrument [18]. The OPP instrument is used to measure perceptions of existing policies and practices in a workplace. The OPP instrument has been validated in the worker population [18] and previously used in the supervisor population (Cronbach’s α equal to 0.88) [25]. OPP scores range from 1 to 5, with a higher score indicating greater knowledge of disability management in the workplace.

Potential Confounding Factors

Leadership Style—Two important dimensions of leadership, initiating structure and consideration, were measured using the Leader Behavior Description Questionnaire (LBDQ) that contains 40 items [27]. Supervisors have high levels of Initiating Structure (LBDQ IS) leadership style if they are goal oriented, define and organize their role in the workplace and establish proper communication with their supervised employees [28]. Supervisors have high levels of Considerate (LBDQ C) leadership style if they show respect and concern for their workers, express support and encouragement and look out for the wellbeing of their supervised employees [29]. The two leadership styles are not mutually exclusive. The LBDQ has the highest internal validity compared to three other leadership questionnaires (Cronbach’s α equal to 0.81) [30]. These two dimensions of leadership were considered to be potential confounders because leadership style has been shown to be associated with supervisors’ support for provision of job accommodations [24].

Supervisor Autonomy—Supervisor autonomy was measured using three questions developed from the Job Content Questionnaire [31]. The three questions asked supervisors to rate their perceived flexibility to recommend job accommodation and make decisions about accommodation. This measure has been validated for use in the supervisor population (Cronbach’s α equal to 0.81) [24]. Supervisor autonomy was considered a potential

confounder because supervisors with more perceived autonomy might be more likely or able to support workplace accommodation [24].

Physical Workload—Physical workload of the typical supervised employee was measured using the Physical Workload Questionnaire (PWQ) [32]. The PWS is a short, 26-item version of the Dutch Musculoskeletal Questionnaire that measures two dimensions of physical workload: heavy physical work (PWQ HP) and long lasting postures with repetitive movements (PWQ LP). Both PWQ HP and PWQ LP have been validated for use in the supervisor population (Cronbach's α equal to 0.92 and 0.86), respectively [32]. PWQ HP and PWQ LP were considered as potential confounders because the physical work in the supervised positions varied between supervisors.

Social Capital—Social capital is the system of norms, networks and trust that help a group of people address common problems [33, 34]. Social capital was measured using the Social Capital at Work Questionnaire (SCWQ) [35], an 8-item questionnaire that measures shared attitudes and beliefs in an organization, trust and respect between workers and mutuality. The SCWQ has been validated for use in the supervisor population (Cronbach's α equal to 0.88) [35]. Social capital was considered as a potential confounder because supervisors with a positive attitude and a trusting relationship with their workers may be more likely to provide workplace accommodation.

Variables within vignette—Worker gender, location of injury (home or work), and previous work absences (no absences or 3 absences (30 days total)) were assigned within the case vignettes. We wanted to determine if these variables would impact the associations of interest.

Demographic variables—Supervisor age, gender, income, education level, unionization, number of supervised workers and managerial experience/seniority were measured using standard demographic questions.

Data Analysis

Univariate descriptive analyses (means, standard deviations, frequency counts) were conducted on all variables. Linear regression and analysis of variance were used to conduct bivariate analyses. Cronbach's alpha coefficients were computed for each study measure to determine and verify internal consistency. Multivariable linear regression was used to assess the association between OPP, GWSC and the likelihood of accommodation, while controlling for confounding factors. We accounted for clustering by employer by adjusting for the employer clusters during the regression analysis. Standardized regression coefficients were used to examine the associations.

Any variables significant in the bivariate analysis ($p < 0.2$) were included in the initial model [36], regressing the average JAS scores on each of the exposures, OPP and GWSC, separately. We used a three step modeling process [36]. First, we assessed potential effect modifiers. We considered three potential effect modifiers for each exposure under study: social capital, disability management policies and supervisors' gender. Any statistically significant effect modifiers ($p < .05$) from the assessment of the initial model and potential

confounders ($p > 0.2$ from bivariate analysis) were included in a gold standard (GS) model. Second, potential confounding factors were assessed by systematically determining subsets of potential confounders that gave similar estimates of effect as the GS model (i.e., within 10% of GS model). Third, the subset model with the estimate closest to the GS model estimate was selected as the final model. If two or more subset models generated similar estimates, the subset with the greatest parsimony/fewest variables and acceptable precision was selected as the final reduced model. All data was analyzed using Stata software, version 13.0 (StataCorp, College Station, TX) [37].

RESULTS

Nineteen companies in Canada and the US agreed to participate. Six industry sectors (manufacturing, utilities, construction, health care & social assistance, retail & wholesale trade and educational services) were represented. Of the 3,077 supervisors who were invited to participate, 804 (26.1%) participated in the study. Eight supervisors were excluded, as they did not supervise at least one employee. This brought the total sample size for analysis to 796. Approximately three quarters of supervisors were male, nearly half were US residents, and the mean age was 46 years (SD: 9.6, range: 19–69) (Table 1). The majority of supervisors were frontline supervisors who completed post-secondary education and supervised workers who were not unionized. The mean number of years with the company and number of years as a supervisor were both 14 (SD: 9.9, range: 0–45; SD: 9.7, range: 0–39, respectively).

Mean supervisor responses to the study measures are presented in Table 2. For each study measure, a total score was generated for participants who provided at least one response. This decision was based on our finding that for each study measure the univariate statistics for measure scores on at least one response, at least three responses, and complete responses were not significantly different. The mean JAS score indicated that supervisors were very likely to provide job accommodations for a back-injured worker (Mean: 3.2, SD: 0.48). There were no statistically significant differences among mean JAS scores for the eight case vignettes, so the regression analyses did not distinguish between case vignettes. The mean corporate safety climate score suggests that supervisors perceived a high degree of safety climate (Mean: 1.4, SD: 0.41). The mean disability management policy score suggests that supervisors felt their employer had strong policies in place to manage disability (Mean: 4.5, SD: 0.60). Cronbach's alpha coefficients for OPP (0.91), GWSC (0.85), autonomy (0.81), LBDQ C (0.72), LBDQ IS (0.76), SCWQ (0.93), PWQ HP (0.91), and PWQ LR (0.82) indicated that all study measures were internally consistent.

Bivariate analyses suggested that autonomy, LBDQ C, LBDQ IS, disability management, corporate safety climate, social capital, physical job demands (both heavy work and long lasting postures with repetitive movements), country of residence, supervisor gender, managerial level and one of the variables within the case vignette (vignette absences) were significantly associated with the likelihood of providing job accommodations ($p < 0.2$). There were no significant associations between the JAS and supervisor age, years as a supervisor, level of education, years with company, number or unionization status of the supervised

workers, or the other two variables within the case vignette (workers' gender and injury location) ($p>0.2$).

Furthermore, we assessed effect modification and confounding (Table 3). We found no significant effect modifiers for either of the two exposures. There were three important confounders for the association between OPP and JAS: social capital, country of residence and LBDQ C. There were also three important confounders for the association between GWSC and JAS: supervisor autonomy, vignette absences and long lasting postures and repetitive movements physical work.

The final models controlling for important confounders found that disability management policies were positively associated with supervisors' likeliness to accommodate ($\beta = .19$; 95% CI: .13; .24) while no association was found between corporate safety culture and supervisors' likeliness to accommodate ($\beta = -.084$; 95% CI: $-.19$; .027).

DISCUSSION

Our study examined the relationship between disability management policies and practices, corporate safety culture and supervisors' likelihood of supporting job accommodations for workers with LBP. Our results indicate that strong perceptions of disability management policies and practices are positively associated with supervisors' likelihood of supporting job accommodations while we did not find an association between corporate safety climate and supervisors' likelihood of supporting job accommodations. Research into the role of workplace factors in the RTW process is important for disability management research. These insights can improve employer policies and the workplace environment with the ultimate goal of making a positive impact on the worker and workplace in general.

Research has shown that it is possible to improve disability management policies and practices, however employer participation, a supportive work climate and cooperation between laborers and management are the necessary factors for substantial improvement [38]. Disability management policies and practices are often complex with many stakeholders and individuals involved, and consequently improving these policies requires teamwork and dedication to improvement goals [38]. Our research adds to the body of literature that effective disability management policies and practices are crucial in aspects of workplace injury, including reducing costs, incidence of injury and the duration of disability [13].

Our study was also the first that we could find that specifically examined the relationship between supervisors' perspectives of corporate safety climate and the likelihood of providing accommodation in the RTW process. We found that there was no association between safety climate and the likelihood of providing accommodated work. Although the literature has not focused on supervisors' perceptions of safety climate and their relationship to the RTW process, there has been research focusing on the role of safety climate in injury risk and injury incidence. Research has shown that workers' positive perceptions about the safety climate of the work environment are related to lower perceived work injury risk [39]. Safety climate is a major issue in today's workforce, as there have been major changes (e.g.

trends toward restructuring, lean production and flexible staffing) in the organization of work across North America over the past few decades [40]. The safety of workers may be affected by these organizational changes through cuts to occupational health services or lack of knowledge about these services due to downsizing [40]. Understanding the role of safety climate in the workplace is critical as these changes continue to affect the working population. However, our finding that safety climate was not associated with supervisors' likeliness to accommodate suggests that a healthy, more positive perception of workplace safety climate alone is not sufficient to improve disability management policies and practices.

Although more research is needed to investigate the relationship between safety culture and disability management policies and practices, our results support the theory that factors associated with work disability and factors associated with work related injury may be different. Safety culture is associated with work related injury [41, 42], but has not been shown to be associated with work disability [43]. However, disability management has been shown to be associated with the length of work disability and not the occurrence of work related injury [42, 43]. Therefore factors predicting workplace disability and work related injury may not be the same and warrant further investigation.

This study is one of the first to specifically examine supervisors' perspectives of disability management policies and safety climate and their association with work accommodation. The main strengths of this study include the range of industry sectors surveyed, the large sample size and the number of variables measured and assessed as covariates. Because we surveyed employers across a number of industry sectors our results should be reasonably generalizable. The main limitations of this study include the low response rate (26.1%), the artificial nature of case vignettes and the reliance on self reported measures. Our low response rate may have produced some selection bias because supervisors who were employed in positive work environments may have been more likely to complete our survey. This would explain the high scores on factors like autonomy and workplace social capital. Although case vignettes are a useful method for standardizing a situation for supervisors, they do not necessarily represent actual workplace scenarios. However, a study incorporating actual scenarios may be prohibitively expensive. Our study measures were all self-reported and therefore we cannot exclude the possibility that supervisors responded to the measures in a manner that would please their employer. However, our study used validated measures to limit the impact of this.

This study found that supervisors' perceptions of disability management policies and practices are positively associated with their likelihood of supporting back injured workers while no association was found between corporate safety climate and supervisor accommodation. These findings are meaningful particularly for employers, who could modify their disability management policies and practices to improve the RTW process and decrease costs. Future research could examine specific modifications in existing disability management policies and practices to determine which specific policies have the greatest impact on the RTW process. Future research should also test these modifications using a prospective study design in an actual workplace population, if possible.

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Implications for Rehabilitation

- Low back pain (LBP) is a major workplace concern and little is known regarding what factors are associated with a supervisor's likelihood to support job accommodation for workers with LBP.
- The objective of this paper was to determine the association between supervisors' perceptions of disability management policies and practices, corporate safety culture and their likelihood of support job accommodations for workers with LBP.
- Results suggest that disability management policies and practices are positively associated with supervisors' likelihood to accommodate while corporate safety culture is not.
- These results are important for employers as it suggests that employers should ensure their disability management policies and practices are clearly communicated to supervisors in order to improve job accommodation and return to work efforts.

Table 1

Characteristics of participating supervisors.

Variable	Number (%)
N	796
Gender	
Male	448 (73.0)
Female	166 (23.0)
Missing	182
Country of residence	
Canada	240 (39.8)
USA	363 (60.2)
Missing	193
Education level	
Completed post-secondary	345 (49.6)
Some post-secondary	153 (22.0)
High school or less	100 (14.4)
Missing	198
Managerial level	
Frontline	422 (69.9)
Mid-level	167 (27.6)
Executive	15 (2.5)
Missing	192
Number of workers supervised	
20 or more	275 (45.6)
10 to 20	149 (24.7)
6 to 10	94 (15.6)
Less than 5	85 (14.1)
Missing	193
Workers unionized	
Yes, all	165 (27.4)
Yes, some	107 (17.7)
No	331 (54.9)
Missing	193
Industrial sector	
Utilities	18 (2.3)
Manufacturing	448 (56.3)
Construction	14 (1.8)
Retail & Wholesale Trade	85 (10.7)
Health Care and Social Assistance	203 (25.5)
Education Services	28 (3.5)
Missing	0
Vignette received – gender	

Variable	Number (%)
Male worker	359 (50.6)
Female worker	351 (49.4)
Missing	86
Vignette received – location of injury	
Injured at work	345 (48.6)
Injured at home	365 (51.4)
Missing	86
Vignette received – previous work absence	
Yes (3 absences)	343 (48.3)
No (0 absences)	367 (51.7)
Missing	86

Table 2

Mean supervisor responses to study measures.

Measure	N	Mean (SD)	Possible range of scores	Higher score indicates...
Job Accommodation Scale score	718	3.2 (0.48)	1–4	Greater likelihood to support accommodations
Corporate Safety Climate score	678	1.4 (0.41)	1–4	Less safety culture
Disability Management Policy score	679	4.5 (0.60)	1–5	Better disability case management and proactive return to work
Autonomy score	704	3.7 (1.10)	1–5	Greater autonomy
Leadership style				
Consideration score	669	77.3 (8.40)	0–100	Higher degree of consideration
Structure score	669	74.5 (9.55)	0–100	Higher degree of initiating structure
Heavy Physical Work score	796	29.2 (20.71)	0–100	More heavy physical work
Long Lasting Postures & Repetitive Movements score	796	37.5 (22.55)	0–100	More long lasting and repetitive work
Workplace Social Capital score	672	4.2 (0.69)	1–5	Greater social capital in the workplace
PAIRS	633	57.5 (8.1)	0–100	

Table 3

Unadjusted and adjusted standardized regression coefficients for the relationship between disability management policies, corporate safety culture and likelihood to accommodate a low back-injured worker.

Exposure	Model	N	Standardized Regression coefficient	95% Confidence Interval
Disability Management Policies	Unadjusted (Crude)	582	.19	.13, .24
	Adjusted full model ^a (Gold standard)	582	.17	.11, .22
	Adjusted parsimonious model ^b	586	.19	.13, .24
Corporate Safety Culture	Unadjusted (Crude)	582	-.08	-.18, .01
	Adjusted full model ^a (Gold standard)	582	-.06	-.16, .00
	Adjusted parsimonious model ^c	665	-.08	-.19, .03

^a Model adjusted for initiating structure leadership style, consideration leadership style, autonomy, disability management (not for disability management), corporate safety culture (not for corporate safety culture), workplace social capital score, heavy physical work score, long lasting postures & repetitive movements score, vignette absences, supervisors' gender, country of residence and managerial level.

^b Model adjusted for workplace social capital score, country of residence and leadership consideration

^c Model adjusted for supervisor autonomy, vignette absences and long lasting & repetitive movements work score.