Hospital support services and the impacts of outsourcing on occupational health and safety

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Background: Outsourcing labor is linked to negative impacts on occupational health and safety (OHS). In British Columbia, Canada, provincial health care service providers outsource support services such as cleaners and food service workers (CFSWs) to external contractors.

Objectives: This study investigates the impact of outsourcing on the occupational health safety of hospital CFSWs through a mixed methods approach.

Methods: Worker's compensation data for hospital CFSWs were analyzed by negative binomial and multiple linear regressions supplemented by iterative thematic analysis of telephone interviews of the same job groups.

Results: Non-significant decreases in injury rates and days lost per injury were observed in outsourced CFSWs post outsourcing. Significant decreases ($P < 0.05$) were observed in average costs per injury for cleaners post outsourcing. Outsourced workers interviewed implied instances of underreporting workplace injuries.

Conclusions: This mixed methods study describes the impact of outsourcing on OHS of healthcare workers in British Columbia. Results will be helpful for policy-makers and workplace regulators to assess program effectiveness for outsourced workers.

Keywords: Outsourcing, Occupational health and safety, Cleaners, Food service workers, Contracting, Re-organization, Underreporting, Healthcare worker

Introduction

Healthcare workers are a high-risk group for occupational injuries. Extensive research has documented the occupational health and safety (OHS) risks of direct care positions such as Registered Nurses, Care Aides, and Licensed Practical Nurses.¹⁻³ There are however, few epidemiological studies on cleaners and food service workers (CFSWs), even though they provide key support services for the healthcare industry.

Cleaners deal with hospital waste removal including garbage, blood and body fluids, human tissue and non-biological matter such as needles, wound dressings, and packaging.¹ They perform procedures to maintain infection control to reduce the risk of nosocomial infections among patients and staff and visitors. Duties of hospital food service workers (FSWs) involve preparing meals for patients in accordance with dietary and health restrictions, catering for visitors, and preparing food for medical and non-medical staff.⁴

Nearly a decade ago, healthcare support services like cleaning and food services were outsourced by four of the six provincial health care providers (known as health authorities) in the Canadian province of British Columbia (BC) in an effort to focus financial resources on core healthcare delivery activities.^{5,6} Negative impacts on OHS have been reported with downsizing and outsourcing in various industries.⁷⁻⁹ Structural disruptions create a different working environment for the employees, with new and more complicated routes of communication as well as access to resources.^{7,10,11} Despite numerous reports discussing the negative impacts of outsourcing on worker health, few rigorously designed studies have compared the impact of outsourcing on the same group of workers (pre- vs. post-outsourcing).^{7,9-15}

This research attempts to quantify the impact of outsourcing on work-related injury rates, both in terms of frequency and severity of injuries, among hospital CFSWs in BC, using a pre-post outsourcing study design. We also report the perceptions of workers regarding the organizational factors that contribute to the safety climate of their workplaces, to highlight areas where prevention efforts might be appropriately targeted.

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Methods

Study 1

Study 1 was a quantitative analysis of three main occupational health indicators for CFSWs in the acute healthcare facilities in BC from 2001 to 2008: annual rates of injury per hospital, average days lost per claim per hospital, and average costs per claim per hospital. The analyses were limited to short-term disability claims for injuries among workers in the three health authorities who outsourced their support services during the study period and the two health authorities who did not outsource their services over this period. A sixth health authority was excluded from this analysis, as at the time of the research, they had not entirely outsourced all their support services.

Accepted short-term disability claims between 2001 and 2008 for CFSWs at acute care hospitals in the province were obtained from the provincial workers' compensation system. Number of injuries, days lost per injury, and total costs per injury were extracted from these claim files and used as outcome measures. Claims for hospital CFSWs were extracted using Statistics Canada occupation codes.¹⁶ Acute care hospitals were identified by cross-referencing the location code of the injury in the claim with the list of acute care hospitals provided by the Ministry of Health. A data file with 8,525 claims for all included health care occupations within all included acute care employers was the data source.

In the absence of payroll data, annual total bed counts for corresponding hospitals for the same time period from the BC Ministry of Health were used as the denominator data in the rate calculations.

Claims were classified into two main categories. Period 1 refers to the years 2001–2003 when no outsourcing was in effect and Period 2 refers to the years 2005–2008 when outsourcing was in effect. The size of hospital (small: <25 beds per hospital, medium: 25–99 beds per hospital and large: 100+ beds per hospital) was used as proxy variable for the working environment, including the OHS environment.

Claims for the year 2004 were excluded from analysis as this was a transition year and claims could not be accurately assigned to outsourced and non-outsourced periods. Separate analyses were carried out for each outcome per occupational group. Each analysis hypothesized a difference between the outcomes in Period 2 compared to Period 1 among hospitals that outsourced their support services vs. no differences among hospitals that did not outsource their support services during the study period.

Incidence rate ratios for rate of short-term disability injury claims per hospital per year were calculated using negative binomial regression, offset by bed count and clustered standard errors by hospital. Zero-truncated negative binomial regression with clustered standard errors by worker was applied to calculate incidence rate ratios

for the rate of average days lost per injury claim per hospital per year. Both negative binomial regression models were adjusted for variables such as exposure period (pre- vs. post outsourcing), health authority effect and size of hospitals.

Average costs per injury claim per hospital per year were calculated using multiple linear regressions. Multivariable relative risks investigating the effect of the exposure period (pre- vs. post outsourcing) on injury outcomes were adjusted for exposure period, type of injury, nature of injury, hospital size (small, medium and large), and health authority. All analyses were carried out using statistical software STATA v.10.¹⁷

Study 2

Study 2 was comprised of qualitative interviews with CFSWs about their perceptions on OHS characteristics and culture at their hospital.

Twenty semi-structured interviews were conducted with CFSWs employed at five pre-selected large acute care hospitals. A purposive sampling strategy was employed to focus on CFSWs within the selected sites. To be included, participants (CFSWs) had to be full-time employees (working 40 h a week), at the five pre-selected acute care hospitals representing each of the health authorities (both outsourced and non-outsourced), for a minimum of 18 months and able to communicate in English. Participants were further stratified based on whether their employer was a contractor to the health authorities (outsourced) or whether they were health authority employees (non-outsourced).

Interviews were conducted via telephone in a secure room and were recorded using a telephone pick up by Olympus (TP7) and recording software GarageBand (developed by Apple Inc.) as a podcast. All records of names, phone numbers, and postal address were destroyed once the study ended as part of the informed consent procedure.

The interviews were semi-structured with open-ended questions focused on discussion topics on workplace training, availability of OHS material, and work-related injury reporting experiences. The transcripts were analyzed using an iterative thematic approach, where saturation was achieved when no more new themes emerged.^{18–21} Themes were formed based on vocabulary, context, and consistency. Once the individual themes were identified, they were then reviewed and collated into broader thematic categories based on the selected topics from the interview guide. Themes and categorical groupings were re-coded in a codebook and reviewed by the co-investigators. The results were organized to allow for comparisons between outsourced and non-outsourced workers on topics relating to their perceptions on workplace health and safety.

Table 1 Number of accepted short-term disability (STD) claims by outsourced exposure status, time period, and occupation

Outsourced status ¹	Occupation	
	Cleaners (%)	Food service workers (%)
<i>Non-outsourced hospitals</i>		
Period 1 (2001–2003)	192 (44)	150 (40)
Period 2 (2005–2008)	242 (56)	230 (60)
Sub-total	434 (100)	380 (100)
<i>Outsourced hospitals</i>		
Period 1 (2001–2003)	547 (49)	238 (60)
Period 2 (2005–2008)	567 (51)	157 (40)
Sub-total	1,114 (100)	395 (100)
Total	1,548	775

¹Period 1 defined as pre-outsourcing and Period 2 as outsourcing in the acute health care industry in British Columbia.

Table 2 Annual rates of average injuries per hospital per 100 beds for acute care hospitals, among cleaners and food service workers (CFSWs) by outsourced exposure periods

Outsourced exposure period ⁴		Average injuries per hospital/100 beds (min, max)			
		Cleaners		Food service workers	
		Non-outsourced ¹	Outsourced ²	Non-outsourced ¹	Outsourced ³
Period 1	2001	3.20 (0, 15)	6.09 (0, 33)	3.03 (0, 30)	3.58 (0, 13)
	2002	2.51 (0, 17)	4.04 (0, 15)	4.87 (0, 50)	2.37 (0, 8)
	2003	2.64 (0, 20)	3.10 (0, 11)	2.06 (0, 16)	3.00 (0, 6)
	2004		Transition		
Period 2	2005	4.10 (0, 33)	4.11 (0, 11)	3.12 (0, 17)	2.06 (0, 6)
	2006	3.21 (0, 38)	4.25 (0, 25)	2.99 (0, 33)	2.37 (0, 7)
	2007	4.01 (0, 17)	3.68 (0, 15)	3.18 (0, 33)	1.97 (0, 5)
	2008	3.29 (0, 18)	3.37 (0, 15)	3.32 (0, 23)	2.41 (0, 8)

¹40 hospitals; ²24 hospitals; ³11 hospitals; ⁴Period 1 defined as pre-outsourcing and Period 2 as outsourcing in the acute health care industry in British Columbia.

Results

Study 1

From a total of 8525 accepted workers' compensation claims for all occupations, 2323 accepted claims for short-term disability were recorded between 2001 and 2008 for CFSWs who worked at acute care hospitals in BC. Of the total claims, two-thirds ($n = 1548$) related to cleaners, while the rest ($n = 775$) related to FSWs (Table 1).

Of the total claims related to cleaners, a majority of the claims ($n = 1114$, 72%) were related to workers operating at sites that had outsourced their services. For claims associated with FSWs, they were split almost equally among those working at outsourced ($n = 395$, 51%) and non-outsourced ($n = 380$, 49%) sites.

Table 2 shows injury rates calculated for all acute care hospitals by year. Not all hospitals had recordable short-term disability claims in each year, so the minimum injuries per hospital per 100 beds were recorded as zero. The mean injury rates fluctuated each year for each period and ranged from a low rate of 1.96 short-term disability claims per hospital per 100 beds among outsourced food services workers in 2007 to a rate of 6.09 short-term disability claims per hospital per 100 beds among outsourced cleaners in 2001. Interestingly, outsourced cleaners tended to have higher injury rates on average than non-outsourced cleaners in any given year, whereas outsourced FSWs tended to have lower injury rates on

average than non-outsourced FSWs with a few exceptions in any one year.

The incidence rate ratios of short-term disability claims for cleaners at non-outsourced hospitals (Table 3) increased non-significantly by 14% (IRR = 1.14, CI = 0.88–1.49) in Period 2 (defined as a period of outsourcing in the acute health care sector) compared to Period 1 (pre-outsourcing) controlling for effects of exposure periods, hospital size and health authority effect. The incidence rate ratios of short-term disability claims for cleaners in outsourced hospitals decreased non-significantly by 21% (RR = 0.79, CI = 0.57–1.09) in Period 2 compared to Period 1.

A similar pattern was observed for FSWs and injury rates. The incidence rate ratios of short-term disability claims for FSWs at non-outsourced hospitals increased by 10% (IRR = 1.10, CI = 0.82–1.47) in Period 2 compared to Period 1. Whereas, the incidence rate ratios of short-term disability claims for FSW at hospitals that outsourced decreased in the post-outsourcing period compared to the pre outsourcing period (IRR=0.65, CI=0.38–1.10). In both cases, results were not statistically significant.

The incidence rate ratios of average days lost per injury for cleaners at non-outsourced hospitals (Table 4) decreased by 2% (IRR = 0.98, CI = 0.68–1.40) in Period 2 compared to Period 1, with no statistical significance. Cleaners in outsourced facilities showed a decrease by

19% (RR = 0.81, CI = 0.66–0.99) in the post-outsourcing period compared to the pre-outsourcing period, with statistical significance of the 95% confidence intervals.

A similar pattern to that of cleaners was observed for FSWs for days lost per injury. The incidence rate ratios of average days lost per injury for FSWs at non-outsourced hospitals decreased by 10% (IRR = 0.90, CI = 0.59–1.37) in Period 2 compared to Period 1. The incidence rate ratios for average days lost per injury at hospitals that outsourced FSWs, saw a 20% decrease in the post-outsourcing period compared to the pre-outsourcing period (IRR=0.80 CI=0.50–1.28). In both cases, results were not statistically significant.

The average costs per injury claim for cleaners at non-outsourced hospitals increased in Period 2 compared to Period 1 (Table 5), though the estimates were not statistically significant. Average costs per injury for cleaners at outsourced hospitals significantly decreased in Period 2 compared to Period 1 (P -value < 0.05).

The pattern for average costs per injury for FSWs was similar to that observed above for cleaners with an increase in the average costs per injury at non-outsourced hospitals in Period 2 compared to Period 1, but a decrease in the average costs per injury at outsourced hospitals over the same time periods. All results for the cost outcome among FSWs were not statistically significant.

Study 2

Twenty participants shared their experiences and perceptions through telephone interviews conducted between February 2011 and April 2011; eight of the participants were non-outsourced workers and 12 were outsourced workers. Worker experience ranged from 2 to 30 years with the same employer. One of the participants had worked for both the health authorities and for private contractors post-outsourcing, while another participant was an outsourced worker who worked two different full-time positions as a cleaner and as a FSW.

Interview data were classified into five broad thematic areas: workplace training, employer support, OHS resources, injury experience, and work overload. In general, little distinction was noted between the sentiments shared by the outsourced workers and the non-outsourced workers with regards to workplace training, employer support, OHS resources, and work overload.

All participants stated that more time for workplace training would benefit their abilities to carry out their work. A majority of the interviewees felt that the training they received when they started their jobs was insufficient and unsatisfactory. Concerns regarding insufficiently trained workers pointed to workload imbalances with shifting workload among the remaining staff to compensate, resulting in a perception of decreased quality of delivery of service. Additionally, workers in both groups identified a need for widespread awareness of the purpose of the

Table 3 Incidence rate ratios (IRR) of STD injuries for CFSWs in acute care facilities by outsourced exposure periods

	Outsourced exposure period ³	Total number of injuries	Non-outsourced		Total number of injuries	Outsourced	
			Unadjusted	Adjusted ²		Unadjusted	Adjusted ²
Cleaners	Period 1	192	1.0 (Reference)	1.0 (Reference)	547	1.0 (Reference)	1.0 (Reference)
	Period 2	242	1.16 (0.87–1.55)	1.14 (0.88–1.49)	567	0.88 (0.65–1.18)	0.79 (0.57–1.09)
	Total	434			1114		
Food service workers	Period 1	150	1.0 (Reference)	1.0 (Reference)	238	1.0 (Reference)	1.0 (Reference)
	Period 2	230	1.12 (0.84–1.49)	1.10 (0.82–1.47)	157	0.61** (0.36–1.05)	0.65* (0.38–1.10)
	Total	380			395		

¹CI: 95% Confidence intervals; ²Adjusted for hospital size, health authority, nature of injury, and type of injury; ³Period 1 defined as pre-outsourcing and Period 2 as outsourcing in the acute health care industry in British Columbia; ⁴ $p < 0.10$, ⁵ $p < 0.05$, ⁶ $p < 0.001$.

Table 4 Incidence rate ratios (IRRs) of average days lost per injury per hospital for CFSWs in acute care hospitals by outsourced exposure period

	Outsourced exposure period ³	Non-outsourced				Outsourced			
		Total number of injuries		Incidence rate ratios (95% CI) ¹		Total number of days lost		Incidence rate ratios (95% CI) ¹	
				Unadjusted	Adjusted ²			Unadjusted	Adjusted ²
Cleaners	Period 1	192	5885	1.0	1.0	547	21,025	1.0	1.0
	Period 2	242	7372	(Reference)	(Reference)	567	18,384	(Reference)	(Reference)
	Total	434	13,257	0.99	0.98	1,114	39,409	0.83**	0.81**
Food Service	Period 1	150	4226	(0.68–1.46)	(0.68–1.40)	238	6973	(0.69–1.00)	(0.66–0.99)
Workers	Period 2	230	5709	1.0	1.0	157	3648	1.0	1.0
	Total	380	9935	(Reference)	(Reference)	395	10,621	(Reference)	(Reference)
				0.86	0.90			0.76	0.80
				(1.47–3.88)	(0.59–1.37)			(0.48–1.20)	(0.50–1.28)

¹CI: 95% Confidence intervals; ²Adjusted for hospital size, health authority, nature of injury, and type of injury; ³Period 1 defined as pre-outsourcing and Period 2 as outsourcing in the acute health care industry in British Columbia; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$.

joint occupational health and safety (JOHS) committees, which are legally mandated by WorkSafeBC, the workplace regulator of BC.

With regards to injury experience, there was a difference in opinion between outsourced and non-outsourced workers. While every worker interviewed felt that they were actively encouraged to report injuries; some workers faced challenges in doing so. Non-outsourced participants reported positive experiences:

[...] my experience in that whole situation [injury] was well addressed; it was actually a good experience for me. I talked to my supervisor as soon as I got out of the emergency when a doctor took a look at it and gave me the results. And so, with my supervisor, we filed a complaint, not a complaint, but a file towards, to, workers' comp[ensation board]. And then I got a claim there and then so from that then I had a doctor's appointment and stuff and so they assessed the situation, reimbursed me loss of wages as a result ... [Participant #09]

Two of the outsourced workers interviewed, who despite feeling encouraged to report injuries, had a negative injury reporting experience:

My experience with that is, you know, my manager before; he [has] been threat[ening] me, like, 'I will contest the WorkSafeBC for your injury'. The manager is kind of mean sometimes. I don't know why, but when I have that injury, he leave me a message at home and then, 'I will contest your claim', would even say that. He want[ed] me to go to work and then with my injury." [Participant #06]

Additionally, at least two outsourced workers alluded to instances of non-reporting of injuries among their colleagues:

[...] the severity to which people will report it is different. As in, if it's a small thing, people in the hospital [direct care staff] will quickly report it to the supervisor, I find, but I find for housekeeping some people will kinda tough it out and say, 'Oh no, it's not a big thing, so I'm not going to tell my supervisor,' and they'll just leave it at that. [Participant #07]

The most prevalent and consistent theme across the interviews was work overload as expressed by every participant regardless of their employment status. Interviewees indicated that more tasks were added to their daily job list and less people were assigned to certain areas thereby increasing their daily workload. Workers also indicated that while the hospitals had expanded in capacity, the number of workers servicing each site had not grown in proportion, leading to understaffing described by a non-outsourced worker who stated:

[...] Our workload has increased by ... it's ridiculous. [...] It's getting worse. [...] they are expecting a lot of stuff out of us. Way more than they used to. There are less jobs and we get paid less on top of it. [Participant #17]

The same participant goes on to acknowledge that with less people to work, they are "scrambling" to accomplish

Table 5 Multivariable analysis of total cost per injury per hospital per year for CFSWs in acute care hospitals by outsourced exposure period

		Non-outsourced		Outsourced	
		Coefficient ¹	Std. error	Coefficient ¹	Std. error
Cleaners	Outsourced exposure period ²				
	Period 1	Reference category		Reference category	
	Period 2	0.20	0.12	-0.25**	0.09
	Constant	7.28***	0.13	7.7***	0.09
	Total claims (N)	434		1114	
		Adjusted R ²	0.065	0.116	
Food Service Workers	Exposure period ³				
	Period 1	Reference category		Reference category	
	Period 2	0.04	0.13	-0.14	0.14
	Constant	7.415***	0.18	7.594***	0.14
	Total claims (N)	380		395	
		Adjusted R ²	0.18	0.24	

¹In (total cost paid till 31 December 2008, adjusted for nature of injury, type of injury, health authority effect, and hospital size; ²Period 1 defined as pre-outsourcing and Period 2 as outsourcing in the acute health care industry in British Columbia; * $p \leq 0.10$, ** $p \leq 0.05$, *** $p \leq 0.001$.

all their tasks and finds that they were, “making more mistakes. ‘Cause, you know, it takes much more to concentrate on the (tray) lines to have so many extra things to do.” Workers also suggested that their work overload also created a stressful work environment as follows:

Well, we are concerned about our health and safety, because we do much workload there. And it’s too much a stressful environment there. I don’t think that’s really healthy. [Interviewer clarifies] Unhealthy mean like, this is overload and employees are always being shouted and employees always with too much pressure. If everybody stressed there, how could that be healthy environment? [Participant#15]

Discussion

This study was designed to investigate the impact of outsourcing on OHS outcomes among CFSWs in acute care hospitals. Overall, among outsourced CFSWs, general decrease in hospital injury rates and average days lost and claim costs per injury was observed from Period 1 (pre-outsourcing in the industry) to Period 2 (post outsourcing in the industry). However, these changes were not statistically significant.

Compared to hospitals that outsourced support services, the decrease in rates of injury were not observed among CFSWs in hospitals that did not outsource their support services during the same study periods. Although there was variability around all of the estimates, we observed non-significant decreases in average days lost and claim costs among cleaners in outsourced hospitals. It is difficult to compare the findings of Study 1 with other findings due to a paucity of studies with objective measures, such as claims outcomes, to assess the impacts of outsourcing on OHS outcomes.^{12,13,22–24} However, results from interviews with CFSWs in Study 2 provided context and suggested that decreasing trends in rates and costs were not altogether representative of improvements in the OHS climate for outsourced workers in acute care hospitals.

The qualitative component of this research found that while most interviewees felt encouraged to report work related injuries, at least two of the outsourced workers indicated that they also had experiences associated with injury underreporting, either directly or through fellow coworkers. It is possible that the decreasing trends seen in the outcomes from Study 1 could be attributed to possible injury underreporting, which could imply that the true trends might in fact be the opposite of what is seen in the results from Study 1. The tendency to underreport injuries is consistent with findings from previous studies.^{1,9,25–27} Reasons for underreporting injuries are associated various factors that can change from hospital to hospital. Some of the possible reasons include:

- Job insecurity

The practice of outsourcing steady jobs to outside contractors can be psychologically stressful for the workers who experienced this transition to new management with lower wages, increased workload, and more stringent terms and conditions as alluded to in the qualitative results. With increased job insecurity, it is plausible that the stress of these events could contribute to lower injury reporting, which may in turn be indicative of a change in the safety culture at these locations, and potentially increasing the risk of a more severe injury in the future.^{27,28}

- Management pressure

Pressures from management to maintain or reduce their experience rating (a factor derived from an employer’s claims history that affects their workers’ compensation premiums) could also be a possible deterrent to reporting injuries.²⁴ Based on the results from Study 1 and the increased median days lost in the period post outsourcing, it is possible that workers were reluctant to report minor injuries, which are more common and that require minimal time off work, thereby reducing the overall annual number of reportable injuries. Injuries severe enough that require time off work because they are harder to endure or hide are more likely to be reported since the workers cannot

“tough it out” as indicated by Participant 07, an outsourced worker. Finally, the workers expressed being overworked in Study 2, suggesting that they might be disinclined to take time off, as it would create a backlog, adding to their overall workload.

- Multiple jobs and incident recognition

Stinson et al.²⁹ noted that about 21% of the outsourced workers they interviewed ($n = 24$), worked more than one job in healthcare. As such, it is plausible that workers who have multiple employers may have difficulty attributing/reporting workplace injuries to the correct employers and therefore may not be accurately captured under the workers' compensation system. Additionally, given the job insecurity, multiple jobs as well as the stress amounting from this that these workers face it could also be possible that the employees may not be recognizing the very fact that a workplace injury is to be reported.²⁸

- Employee turnover

Studies by Zuberi³⁰ and Zuberi & Ptashnick³¹ report a high employee turnover at outsourced facilities in the BC healthcare sector, particularly with supervisory staff. On one hand, it could be hypothesized that increased attrition rates may contribute to a lower injury rate in this population (outsourced workers) as workers may not be present for a sufficient duration of time to report an injury under one particular employer. Alternatively, employers with lower turnover rates have maintained the same aging workforce whose risk of injury increases with age or that feel confident and secure enough to report their injuries.

Apart from injury reporting, interview results from Study 2 showed no difference in four out of the five themes among outsourced and non-outsourced workers, and were consistent with findings from other studies among similar groups.^{30,31} Feeling overworked and understaffed was the most consistent theme across the interviews. Zuberi and Ptashnick³¹ indicate this may be as a result of the private sector model, which relies heavily on keeping their costs low, especially in competitive industries such as support services.

It should be emphasized that the majority of the outsourced hospitals included in this study are larger in size (as measured by their annual bed counts) and are located in and around the Greater Vancouver Regional District as compared to non-outsourced facilities. Lutfiyya et al.³² suggest that larger urban hospitals are more likely to have better funding, structural design, and more resources given the diversity of their services and the number of patients they serve, which may be a factor (i.e. more OHS resources) leading to less risk of injuries and days lost per claim and costs per claim in non-outsourced hospitals as shown in Study 1.

Strengths

This study, unlike others has focused on a single population, following them through a transition by examining seven years of workers' compensation data and

supplementing the quantitative results with a qualitative investigation to further understand the findings. Objective measures, such as workers' compensation claims outcomes, were found to be lacking in many other studies that have attempted to assess the impacts of outsourcing on OHS outcomes.^{12,13,22,24}

Limitations

The rates of injury and incidence rate ratios for injuries were calculated using bed counts as a denominator instead of more robust measures like full-time equivalents or payroll productive hours, as we were unable to gain access to employer payroll information. This underestimates results from Study 1 as it does not account for changes in worker population over time, but bed counts are reflective of workforce size generally and any biases in using bed counts as a denominator would be consistent across hospitals. The study was also limited by injury claims that were accepted and paid by the workers' compensation system for short-term disability (that require health care and at least one day away from work) only. This would underestimate the current calculated risk of injury, their severity as measured by days lost, as well as the trends in costs, especially if injuries are underreported to the compensation system and differentially so for outsourced workers.

Interviews for Study 2 were conducted over the phone where the lack of visual cues can lead to a loss of context as well as the lack of a physical presence that may have contributed to difficulty in building rapport between the interviewer and interviewee. These challenges can often hinder probing into sensitive areas of questioning as well as building trust,^{33–35} although differences were detected around issues of reporting of injuries among outsourced vs. non-outsourced workers, and other findings with regards to workload were consistent with previous research.^{1,31}

Conclusion

While most of the results for our quantitative component were not statistically significant, based on the spread of the confidence intervals for the incidence rate ratios for injuries and average days lost per injury per hospital, our results may highlight the possibility of an impact of outsourcing on the OHS injury profile of the workers in the period post outsourcing relative to the period prior to outsourcing, and differentially so for workers in outsourced vs. non-outsourced hospitals. Interviews with outsourced workers provide preliminary evidence that underreporting of work injuries may influence these outcomes. This study serves to further support the need of ongoing evaluation of the impact of outsourcing on worker health and safety. Future research must pay particular attention to the likelihood of underreporting of injuries as it can skew the overall safety statistics and misrepresent workplace safety cultures, injuring more workers in the long run. While several studies have tried to qualitatively confirm the tendency to underreport injuries, especially where job security is

low, exploring the impact of this on OHS with quantitative data will have a stronger impact on policy. Identifying the drivers that lead to causes of underreporting may provide employers with an opportunity to address this issue. For example, solutions can be directed towards the business bottom line, and strengthening employee–corporate trust and relationships to improve the workplace safety culture.

In conclusion, we recommend that employers who choose to outsource support services consider the benefits of implementing improved surveillance measures as well as creating a positive safety climate where workers are encouraged to report their injury incidence, regardless of the outcome. While it is important to implement working systems that maximize efficiency of resources for the health care sector, it is equally important to create a balance between healthcare system demands and the demands of the jobs of the employees, which ultimately will affect quality of the service delivered.³⁶

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