Occupational Health and Safety Research in Action:
METHODS, RESULTS AND APPLICATIONS
Papers from the Canadian Association for Research on Work and Health (CARWH) – Réseau de recherche en santé et en sécurité du travail du Québec (RRSSTQ) 2008 Conference
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Canadian Occupational Health and Safety Research in Action: Advances and Challenges

Susan Stock, MD, MSc, FRCPC,1 Aleck Ostry, PhD,2 France Labrèche, PhD3

This special occupational health supplement to the Canadian Journal of Public Health consists of 10 papers selected from the 2008 conference “Occupational Health and Safety Research in Action: Methods, Results and Applications”, organized jointly by the Canadian Association for Research on Work and Health (CARWH) and Quebec’s occupational health and safety research network, the Réseau de recherche en santé et en sécurité du travail du Québec (RRSSTQ), and held in Montreal in June 2008.

We hope this CJPH supplemental issue will raise greater awareness of the importance of work as a determinant of health, raise the profile of occupational health within public health and highlight the need for more and consistent funding for occupational health and safety (OHS) training and research. In 2008, approximately 950,000 Canadians reported nonfatal occupational injuries and diseases, over 300,000 were compensated for claims with work absences and more than $7.6 billion was spent on wage loss, health care and rehabilitation by workers’ compensation boards and self-insured employers in Canada.1 While these figures are dramatic, it is noteworthy that workers’ compensation statistics greatly underestimate the total number of occupational injuries and disorders and their costs.2-4 The inverse relationship between socio-economic status and many chronic health conditions is well recognized2 and much of recent public health policy is aimed at addressing inequities in the social determinants of health. Often the contribution of physical and psychosocial work exposures is overlooked.

In recent years, much work has been conducted to identify the contribution of work exposures in explaining observed socio-economic gradients of health conditions including musculoskeletal disorders, mental health, cardiovascular disorders, as well as perceptions of general health.5-12 This research indicates that improving work conditions and associated policies to better the lives of workers and their families is key to flattening the socio-economic gradient in health, and yet this is not reflected in the number and scope of training programs for occupational health professionals and in funding allocated to occupational health research in Canada. Moreover, with substantial cutbacks in funding underway in several provinces, OHS research and training is currently quite precarious in many parts of Canada.

The papers selected for this CJPH supplement showcase a few critical aspects of OHS research currently underway in Canada, ranging from broad policy and legal analyses to qualitative studies of workplace preventive practices and epidemiologic studies of occupational disorders with implications for prevention and public policy. Several provide insight into creative methodologies for occupational health research.

Five papers focus on the structural dimensions of the workplace or workplace policy environment that need improvement based on a social determinants of health framework. They also highlight major gaps in policy at the national (Heymann et al.), the provincial (Lippel et al.) and the workplace level (Yassi et al., Eakin et al., Robson et al.), and suggest ways to strengthen policies that improve the health of workers and their families.

The paper by Heymann et al., although somewhat outside the traditional purview of OHS, addresses the impact of leave policies on work/life balance and health of workers. It compares international policies governing employment leave for illness, parental leave and care of dependents and generally shows that Canada lags behind other large industrialized democracies in terms of duration and generosity of benefits. These issues are especially important for female workers given that women carry out most “balancing” of family needs around health and care of either children or elderly parents.

In terms of policy at the workplace level, Yassi et al. used focus groups to explore the views of health care workers on how to promote voluntary compliance to influenza vaccination programs among health care workers. This BC study has relevance to many other regions (and to other workers) and provides a coherent and practical vision for promoting vaccination uptake among health care workers that is integrated into a broader occupational health and safety approach that is not coercive.

Through an analysis of OHS organization in Canada, Eakin et al. demonstrate that several unique needs in small workplaces are not taken into account by current regulatory and policy initiatives and thus the OHS needs of workers employed in them are often overlooked. Given that the vast majority of Canadian workplaces employ fewer than 50 workers, these authors have pointed to a major policy gap that needs to be filled in this country.

Robson et al. identify the dearth of research on OHS management audits and how this seemingly bureaucratic and little-known activity is actually key to better understanding how to develop prac-
EDITORIAL

tical, coherent and efficient systems at the organizational level to promote OHS, thereby better protecting workers in Canada. They both identify a gap in the research and suggest a way forward to close it.

Lippel et al. identify gaps in policy governing compensation for mental health disability arising from workplace exposure to acute and chronic stress. They also describe the tremendous provincial variations in policy and implementation and the consequent impact of these differences for Canadian workers. With a shift away from heavy industry and major transformations in the organization of work, workplace stressors and mental health in the workplace are of increasing concern to employers and workers.

Mental health in the workplace is also the subject of two other papers that analyze health survey data. Using data on Quebec workers from the 2002 Canadian Community Health Survey, Vézina et al. found that psychological distress was associated with low social support at work, low decisional authority, intense physical work demands, job insecurity, and among women only, high psychological job demands.

Blanc et al., with a longitudinal analysis of data from the Canadian Population Health Survey from 1994 to 2003, found a relationship between psychological job demands and new onset of psychological job demands.

Two studies analyze workers’ compensation data to identify workplace factors that could be modified to reduce the burden of occupational injuries. Colantonio et al. present an analysis of traumatic brain injuries (TBI) using 2004 Ontario workers’ compensation data. TBI are associated with significant long-term disability with increasing incidence in the workplace in recent years. Although male workers suffer more frequently from more serious TBI, women workers have high rates of less serious brain injuries. This study also identified the industries at highest risk and several workplace risk factors contributing to them that can be targeted for prevention.

Cherry et al. studied Alberta workers’ compensation data over a 10-year period to identify workplace factors that influence the likelihood of a second workers’ compensation claim and the mean time to a second claim. They found considerable variation of risk by gender, age, industry and occupation, with highest risk of early second claims among males, younger workers and various industries and occupations.

Finally, Smith et al. present recent advances in the use of administrative and survey data to measure the burden of occupational illness and injury, to identify risk factors and/or groups at risk, and to influence public policy. They provide examples of studies from Ontario, Quebec and British Columbia using techniques such as record linkages of workers’ compensation data, health services utilization data, health survey data, vital statistics and/or cancer registries that have furthered knowledge on a wide range of work-related disorders. British Columbia, in particular, has developed a wide range of linked data resources, administered through Population Data BC, that can be a model for other provincial or national initiatives. Methodological insights into how large workers’ compensation and health databases may be linked and used to further OHS research in many jurisdictions in Canada are presented.

These papers demonstrate some of the wide range of OHS research in the country and its potential to influence public health policy. This important area of public health must be encouraged and the importance of work as a determinant of health more widely recognized in public health training, research funding and resources for preventive intervention.

REFERENCES

La recherche canadienne en santé et sécurité du travail en action : progrès et défis

Susan Stock, M.D., M.Sc., FRCPC, Aleck Ostry, Ph.D., France Labrèche, Ph.D.

Ce supplément de la Revue canadienne de santé publique consacré à la santé au travail comprend 10 articles sélectionnés parmi les communications au congrès « Recherche en santé et sécurité du travail en action : méthodes, résultats et applications » organisé conjointement par l’Association canadienne de recherche en santé au travail (ACRST) et le Réseau de recherche en santé et en sécurité du travail du Québec (RRSSTQ) en juin 2008 à Montréal.

Nous espérons que ce numéro supplémentaire de la Revue augmentera la conscience sur l’importance du travail en tant que déterminant de la santé, qu’il donnera plus de visibilité à la santé au travail en santé publique et qu’il fera ressortir le besoin de financement accru et plus constant pour la formation et la recherche en santé et sécurité du travail (SST). En 2008 au Canada, quelque 950 000 personnes ont déclaré des blessures et des maladies professionnelles non mortelles; plus de 300 000 ont reçu une indemnisation pour lésion professionnelle avec absence du travail; et les commissions des lésions professionnelles et les employeurs auto-assurés ont dépensé plus de 7,6 milliards de dollars en assurance-salariale, en soins de santé et en réadaptation. Ces chiffres sont impressionnants, d’autant plus que les statistiques d’indemnisation des travailleurs sous-estimé de beaucoup le nombre et les coûts réels des blessures et des maladies professionnelles. La relation inverse entre le statut socioéconomique et de nombreuses maladies chroniques est bien connue, et une grande partie des politiques de santé publique récentes visent à redresser les inégalités dans les déterminants sociaux de la santé. Or, souvent, la contribution des contraintes physiques et psychosociales au travail n’est pas prise en compte. De nombreuses études récentes ont évalué la part de l’exposition professionnelle dans les gradients socioéconomiques observés en lien avec divers problèmes de santé tels que les troubles musculosquelettiques, la santé mentale, les maladies cardiovasculaires et la perception de l’état de la santé générale. Selon ces études, il est fondamental d’améliorer les conditions de travail et les politiques du travail, et ainsi la vie des travailleurs et de leurs familles, si l’on veut aplanir le gradient socioéconomique en santé. Pourtant, cette préoccupation n’apparaît pas dans le nombre ni dans le contenu des programmes de formation des professionnels en santé et sécurité du travail, ni par ailleurs dans le financement accordé à la recherche en SST au Canada. De plus, avec les compressions importantes du financement déjà amorcées dans plusieurs provinces, la recherche et la formation en SST sont dans une situation très précaire dans une grande partie du pays.

Les articles sélectionnés pour ce supplément de la Revue exposent quelques aspects cruciaux de la recherche en SST en cours au Canada. Ils englobent des analyses de politiques publiques ou juridiques, des études qualitatives des pratiques de prévention en milieu de travail ainsi que des études épidémiologiques de maladies professionnelles, ayant tous des retombées sur la prévention et les politiques publiques. Plusieurs articles donnent un aperçu de méthodes de recherche innovatrices dans le domaine de la santé au travail.

Cinq articles abordent, dans l’optique des déterminants sociaux de la santé, les aspects structurels de l’environnement des milieux de travail ou des politiques sur le travail à améliorer. Ils soulignent aussi les lacunes majeures des politiques au niveau national (Heymann et al.), au niveau provincial (Lippel et al.) et au niveau du milieu de travail (Yassi et coll., Eakin et coll., Robson et coll.), et proposent des moyens pour renforcer les politiques qui améolèrent la santé des travailleurs et de leur famille.

Bien que divergeant du domaine traditionnel de la SST, l’article de Heymann et coll. aborde l’impact des politiques de congés sur la conciliation vie-travail et sur la santé des travailleurs. On y compare les politiques de différents pays quant aux congés de maladie, aux congés parentaux et à ceux permettant de prendre soin d’un parent malade. Ces comparaisons montrent que dans l’ensemble, le Canada accuse du retard par rapport à d’autres grandes démocraties industrialisées en ce qui a trait à la durée et à la générosité de plusieurs avantages sociaux. Ces questions sont particulièrement importantes pour les travailleuses car ce sont encore souvent les femmes qui doivent « jongler » avec les besoins familiaux concernant la santé et les soins aux enfants ou aux parents âgés.

Dans le domaine des politiques au niveau du milieu du travail, Yassi et coll. ont fait appel à des groupes de discussion pour explorer les points de vue des travailleurs de la santé eux-mêmes concernant promouvoir l’adhésion volontaire aux programmes de vaccination contre la grippe auprès d’eux. Cette étude britannico-columbiaïenne devrait être pertinente pour bien d’autres régions (et d’autres travailleurs). De plus, elle présente une vision cohérente et pratique pour promouvoir l’acceptation de la vaccination par les autres travailleurs.

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travailleurs de la santé, en l’intégrant dans une approche plus globale de santé et sécurité du travail non coercitive.

Au moyen d’une analyse organisationnelle de la SST au Canada, Eakin et coll. démontrent que plusieurs besoins propres aux petits établissements ne sont pas pris en compte par les initiatives réglementaires et stratégiques actuelles, et donc, que les besoins en SST des travailleurs qui y sont employés sont souvent négligés. Étant donné que la grande majorité des établissements canadiens emploient moins de 50 travailleurs, ces auteurs signalent une importante lacune réglementaire qu’il faudrait combler au Canada.

Robson et coll. constatent le manque de recherche sur les audits de gestion en SST et font valoir que cette activité apparemment bureaucratique et méconnue est en fait la clé d’une meilleure compréhension des moyens d’élaborer des systèmes organisationnels pratiques, cohérents et efficaces pour promouvoir la SST, et ainsi mieux protéger les travailleurs au Canada. L’article cerne une lacune dans la recherche et propose un moyen de la combler.

Lippel et coll. constatent qu’il y a des lacunes dans les politiques régissant l’indemnisation des travailleurs ayant des problèmes de santé mentale découlant d’une exposition aiguë ou chronique au stress en milieu de travail. Ils décrivent aussi les énormes écarts provinciaux dans les politiques et leur mise en œuvre, et les conséquences de ces différences pour les travailleurs canadiens. La diminution de l’importance de l’industrie lourde et les transformations majeures de l’organisation du travail font que les contraintes psychosociales en milieu de travail et la santé mentale au travail préoccupent de plus en plus les employeurs et les travailleurs.

La santé mentale au travail est le sujet de deux autres articles qui analysent des données d’enquêtes sur la santé. À l’aide des données sur les travailleurs du Québec tirées de l’Enquête sur la santé dans les collectivités canadiennes de 2002, Vézina et coll. constatent que la détresse psychologique est associée à un faible niveau de soutien social au travail, à une faible autorité décisionnelle, au travail physiquement très exigeant, à l’insécurité d’emploi et, chez les femmes seulement, à la demande psychologique élevée au travail.


Les plus à risque et cerne plusieurs facteurs de risque au travail qui peuvent être ciblés pour la prévention.

Cherry et coll. ont étudié les données d’indemnisation des travailleurs de l’Alberta sur une période de 10 ans pour cerner les facteurs professionnels qui influencent la probabilité que le travailleur présente une deuxième demande d’indemnisation ainsi que la durée du délai moyen entre la première et la deuxième demande. Ils ont constaté des écarts considérables de risque selon le sexe, l’âge, l’industrie et la profession. Les risques les plus élevés de présenter une deuxième demande d’indemnisation peu après la première ont été observés chez les hommes, les jeunes travailleurs et dans diverses industries et professions.

Enfin, Smith et coll. présentent les progrès récents accomplis dans l’utilisation des données administratives et des données d’enquête pour mesurer le fardeau des maladies et des blessures professionnelles, cerner les facteurs de risque et/ou les groupes à risque et influencer les politiques publiques. Ils donnent des exemples d’études menées en Ontario, au Québec et en Colombie-Britannique qui font appel à des techniques comme le jumelage des données d’indemnisation des travailleurs, des données d’utilisation des services de santé, des données d’enquêtes sur la santé, de registres civils ou de registres du cancer; ces techniques ont fait avancer les connaissances sur un vaste éventail de problèmes de santé liés au travail. La Colombie-Britannique, en particulier, a mis au point un grand nombre de sources de données jumelées, administrées par Population Data BC, qui pourraient servir de modèle à des initiatives nationales ou dans d’autres provinces. On présente un aperçu de méthodes pouvant servir à relier de grandes bases de données sur la santé et sur l’indemnisation des travailleurs et à les utiliser pour faire avancer la recherche en SST dans de nombreuses juridictions au Canada.

Ces articles démontrent l’étendue de la recherche en SST au pays et de son potentiel d’influence sur les politiques publiques de santé. Cet important domaine de la santé publique doit être encouragé et l’importance du travail comme déterminant de la santé doit être plus généralement reconnue dans la formation en santé publique, dans le financement de la recherche et dans les ressources consacrées aux interventions préventives.

RÉFÉRENCES

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Join the Canadian Association for Research on Work and Health (CARWH)

Established in 2001, CARWH is a pan Canadian, non-profit organization of researchers that represents a wide variety of disciplines engaged in research in work and health. It is run by a volunteer board that reflects the interdisciplinarity of the field and the various regions of the country.

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Work shapes the lives of Canadian adults and those they care for. Two thirds of Canadian adults participate in the workforce, including over 70% of men and over 60% of women aged 25 and over. Work determines Canadians’ income and shapes their health by influencing where they live, framing their social environment and defining their exposures. Working conditions are one of the most important determinants of health for adults, and for the children and elderly family members they care for. In 2007, in Canada, 68% of mothers with children under age 6 were employed, as were 80% of mothers with children aged 6-15. In addition, an estimated 2.85 million or more Canadians provide care and assistance to family members in need of support, and almost half of these caregivers are employed either full- or part-time.

This article examines provincial and territorial policies in Canada with respect to three forms of paid leave that have the potential to substantially affect the health of workers and their families: paid sick leave for employees, paid leave to care for the health of family members and paid parental leave. Research has shown that taking the necessary time to rest and recuperate when sick encourages a faster recovery and can prevent minor health conditions from progressing into more serious illnesses that require more costly medical treatment and longer absences from work. Without paid sick days, working families are placed at risk economically, experiencing wage and job loss when they take time off to care for themselves or for family members. Paid sick days make an enormous difference in adults’ ability to return to work and keep their jobs after both major and minor illnesses. In a study of US nurses, paid sick days were the only benefit that was significantly associated with an increased likelihood of returning to work: nurses with paid sick days were 2.6 times more likely to return to work after a heart attack or angina.

Paid sick days can also benefit employers by limiting the spread of infectious diseases in the workplace. As just one example, the US Centers for Disease Control and Prevention recommended that Americans stay home when sick with influenza, a disease that leads to 200,000 hospitalizations and over 36,000 deaths in an average year. In fact, recent studies have documented that the costs incurred as a result of sick employees coming to work often surpass the costs of sick employees staying home. In health care and service settings, providing sick days also helps protect patients and customers. For instance, rates of respiratory and gastrointestinal outbreaks are lower among residents in nursing homes that provide their employees with paid sick days.

Workplace policies are also essential to adults’ ability to meet their families’ health needs. Studies of hospitalized children have
shown that sick children have shorter recovery periods, better vital signs and fewer symptoms when their parents share in their care,21-24 with parents’ presence reducing children’s hospital stays by 31%.25 Our research with families and child care providers showed that when parents lack paid leave to care for family members they are far more likely to send their sick children to child care and school,12,26-27 thereby exacerbating the higher rate of observed infections in day care centres, including higher rates of respiratory and gastrointestinal infections.28-31 Similarly, without paid leave to care for their children, resource-poor parents may have little choice but to miss crucial doctors’ appointments or to have sick children stay home alone, where they may be unable to see physicians for diagnoses, medication or emergency help. Resource-poor parents with paid leave to care for their families are five times as likely to be able to care for sick children at home,27 and they are more likely to provide preventive health care. Similarly, a wealth of research has shown that when sick adults receive support from family members, they have substantially better health outcomes from conditions such as heart attacks and strokes,34-36 and they live longer.37,38

Parental leave plays as large a role as medical leave in promoting families’ health. A study analyzing data from 16 countries over 25 years concluded that paid parental leave policies significantly decreased child mortality, even after controlling for income, health technology and other factors likely to influence child health.39 Decades of research have examined the importance that time to bond between fathers and their children is less significant. The bonding between fathers and their children, there is no evidence to suggest that bonding between fathers and their children is less significant. The transformations that have occurred in women and men’s work and family lives make it just as pressing for working men to receive adequate leave to care for family members as it is for women. The impact of the bond between fathers and mothers is a growing area of research in recent years.47,48 In the absence of paternal and family leave policies, men do not have the same opportunities as women to develop relationships with their children and aging family members, many women carry double the workload of most men through a combination of paid and unpaid work, children are unlikely to receive as much parental care, marriages are placed under greater stress,49 and new mothers are more likely to suffer from maternal depression.50 Paternity leave policies offer a significant advantage over parental leave in terms of promoting gender equality: it has been demonstrated that when leave is available that can only be used by the father, fathers are more likely to take leave and stay at home to care for a new child than when the leave available can be used by either or both parents.51

Parental leave also increases the probability and duration of breastfeeding, the benefits of which have long been demonstrated in the medical literature.52,53 Generous maternity leave benefits have given European mothers the opportunity to continue exclusively breastfeeding their infants at home for at least 6 months, as recommended by the World Health Organization, and to continue breastfeeding with appropriate complementary solid foods in the second half of the first year of life.54 Breast milk contains the ideal mix of nutrients that are key for infant development,55 and studies in both industrialized and developing countries have revealed that breastfed infants have a 1.5- to 5-fold lower relative risk of mortality.56-58 Breastfeeding has been shown to markedly reduce the risk of gastrointestinal infections,59-62 respiratory tract infections,62-65 otitis media,66,67 meningitis,68 sudden infant death syndrome67 and atopic dermatitis in infancy.69 One of the most consistent benefits reported in epidemiological studies has been the accelerated neurocognitive development of breastfed infants.70,71 Health benefits have also been reported for mothers, including accelerated post-partum weight loss, reduced risk of premenopausal breast cancer and possible reduced risks of ovarian cancer and osteoporosis.72

Recognizing the important impact of leave policies on working families’ health and well-being, we measure how Canada’s provincial and territorial public policy compares with that of other countries around the world.

**METHODS**

**Canadian data**

We gathered data from all Canadian provinces and territories on three paid leave policies essential to health: paid sick leave for employees, paid parental leave and paid sick leave to care for family members. We then compared the Canadian policies with our data on 186 of 192 UN nations.

**Understanding the jurisdictions**

Canada is a federal state, meaning that the control or jurisdiction over policies is divided between the federal government and the provinces or territories. The division of authority over specific areas of legislation is laid out in sections 91 and 92 of the Constitution Act, 1867. Labour, education, childcare, human rights and discrimination generally fall within provincial or territorial jurisdiction, although there are important exceptions. By virtue of the sector in which they work, approximately 10% of the population is covered by the Federal Labour Code.6

The federal government can provide funding to all provinces and territories, notwithstanding the provincial government’s authority over the issues at stake. For example, although job protection during paid leave is legislated at the provincial or territorial level, the payments received by the employees on leave come from the federal government’s Employment Insurance (EI) program. This applies for earnings associated with maternity and parental leave (except in Quebec, which has opted out of the federal program in favour of its own), compassionate care leave and long-term sick leave.

**Description of data sources**

Information was collected between the months of June 2007 and July 2008 on paid leave policies across the relevant Canadian jurisdictions. Information sources included provincial, territorial and federal labour codes, as well as other universally applicable legislation and policies addressing the needs of working families. Programs that were not guaranteed by law were not included.

**Data checking and verification**

To minimize omissions and assure accuracy, the collected information was confirmed with experts within the relevant departments in the provinces, territories and federal government. Labour,
education, health and social services departments were contacted, as well as human rights bodies and disability offices.\textsuperscript{b}

**Global data**

In order to assess how Canadian provinces and territories are performing relative to countries around the world, we compared them with data collected by the Project on Global Working Families.

We analyzed labour codes and other relevant legislation, including acts and decrees governing working time, holidays and leave, and those protecting the rights of families. The International Labour Organization is the world’s single most comprehensive source of labour legislation, and the vast majority of legislation used in our analysis is from its NATLEX database, which contains legislation related to labour, social security and human rights. The research team was able to read labour codes and legislation available in French, Spanish, English, Chinese, Portuguese and Arabic, and we examined every labour code and piece of legislation that relates to Index items. Our final review of the NATLEX database was completed in 2008. We conducted additional Internet searches for the government websites of specific countries, which we reviewed for the most current versions of legislation referred to elsewhere.

We used the Social Security Programs throughout the World database, the most comprehensive source of global data on social security policies, to analyze the availability of paid sick and parental leave through social insurance.

Further information on the global data is available online,\textsuperscript{22} and detailed methods of the global research have been previously published along with global findings.\textsuperscript{23}

**RESULTS**

**Sick leave**

In Canada, sickness benefits are available through the federal government for individuals who are unable to work because of illness, injury or quarantine. To receive EI benefits, employees must have experienced a decline in income of at least 40% as a result of time taken off work for an illness and must have worked a minimum of 600 insurable hours within the qualifying period, usually defined as the past year (52 weeks). Payments are usually based on the last

\* In Ontario, leave for personal health needs is only available to those working in companies with 50 or more employees.
\* In Saskatchewan, up to 12 days of leave is provided for illnesses or injuries that are not serious.

six months (26 weeks) of insurable earnings, up to a yearly maximum in 2008 of $41,100. If workers have reduced their hours before their claim (for instance, because of sickness), the reduced weekly earnings are used as a reference for the calculation and affect benefit levels.

Many countries provide social insurance or paid sick leave for personal health needs,\textsuperscript{a} but there is a marked difference in the level of benefits among nations. While Canada typically pays sickness benefits from the 3rd to the 17th week of illness, globally at least 90 countries provide benefits for at least 26 weeks or until recovery. Canada replaces 55% of an employee’s weekly insurable income, whereas at least 127 countries provide a higher wage replacement rate, 81 countries replacing 100% of lost wages for at least part of the leave. Canada provides only 8.25 full-time equivalent (FTE) weeks (wage replacement rate multiplied by duration of coverage), placing it below the majority of the world (see Figure 1). Canada also lags behind when compared with the majority of its OECD (Organisation for Economic Co-operation and Development) counterparts. Indeed, 22 countries out of the organization’s 30 members offer a longer paid sick leave, including, among others, Austria, Denmark, France, Germany, Japan, the Netherlands, Norway and Sweden.

While paid sickness benefits are received through the Canadian federal EI plan, the right to job protection during sickness is legislated within each province or territory. Federal sickness benefits are provided for 15 weeks, but most jurisdictions do not offer job protection for this period. In fact, only Saskatchewan, Quebec and federally regulated industries guarantee workers job protection if sick leave lasts over 12 days.\textsuperscript{4} The others offer no job protection or only protect workers’ jobs for a short period (see Figure 2). As there is typically a waiting period of 10 working days before any federal benefits can be paid, this short-term job protection effectively acts as unpaid sick leave for short-term illnesses. Globally, Canada lags behind: at least 106 countries guarantee paid short-term leave for personal health needs. Eighteen OECD countries also guarantee

\textsuperscript{a} 136 countries provide paid sick days for personal health needs.

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\textsuperscript{b} When targeted departments did not exist, we contacted the departments responsible for these topics.
this leave, including, among others, Australia, Austria, Denmark, Finland, Germany, the Netherlands, New Zealand, Norway and Switzerland.

Family medical leave

Internationally, Canada performs well in having policies that guarantee paid leave to care for dependants with serious illnesses. The federal government guarantees six weeks of paid leave over a period of 26 weeks to provide care or support to gravely ill family members at risk of dying within six months. Only 39 countries guarantee such leave with pay, among them 16 out of 30 OECD members. Notably, Canada’s definition of “family member” is very expansive, covering a broad range of relationships, and compassionate care leave can be split among family members. As with sick leave, job protection is determined on the provincial/territorial level. Most jurisdictions guarantee workers their jobs during compassionate care leave, with the exception of Alberta.

Canada lags behind in the provision of paid leave to address children or family members’ health needs for non-life-threatening conditions. Globally, at least 56 countries provide leave explicitly to address children’s health needs, and of these at least 39 provide pay. Among the OECD countries, 15 provide paid leave without limiting this to severe or life-threatening illness of children.

Many provinces offer unpaid, job-protected leave that can be used for children’s non-life threatening health needs, ranging in length from 2 to 10 days per year. Alberta, the territories and the federal jurisdiction do not make this guarantee, and Ontario only provides comparable leave for employees in large companies (excluding roughly 29% of the work force). In some cases, other protections exist, such as human rights legislation or collective bargaining agreements.


* Full time is defined here as 35 hours/week, following the model provided in the 1996 remodeling of EI.
Figure 5. Length of tenure required for job protection during maternity, paternity or parental leave

<table>
<thead>
<tr>
<th>Province</th>
<th>Tenure Required</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
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<tbody>
<tr>
<td>British Columbia</td>
<td>no tenue required</td>
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<tr>
<td>New Brunswick</td>
<td>no tenue required</td>
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<tr>
<td>Quebec</td>
<td>no tenue required</td>
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<tr>
<td>Ontario</td>
<td>13 weeks</td>
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<tr>
<td>Newfoundland and Labrador</td>
<td>20 weeks</td>
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<tr>
<td>Prince Edward Island</td>
<td>20 weeks</td>
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<tr>
<td>Saskatchewan</td>
<td>20 weeks</td>
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<tr>
<td>Manitoba</td>
<td>7 months</td>
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<tr>
<td>Alberta</td>
<td>1 year</td>
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<tr>
<td>Northwest Territories</td>
<td>1 year</td>
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<tr>
<td>Nova Scotia</td>
<td>1 year</td>
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<tr>
<td>Nunavut</td>
<td>1 year</td>
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<tr>
<td>Yukon Territory</td>
<td>1 year</td>
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* In Ontario and Newfoundland and Labrador, the length of tenure is measured from the day a woman began working to her due date (as opposed to the day she intends to commence her leave).

**DISCUSSION**

While Canada has made valuable advances in paid health and family leave, both national and provincial policy lag behind in several important areas that are critical to the health of Canadians. Relative to global standards, many of the provinces are quite weak when it comes to job protection for sick workers. Although some provinces offer lengthy job protection, other provinces and territories, including Alberta, British Columbia and Nunavut, have no job protection whatsoever. This means that an individual who is absent because of a bad case of the flu or gastroenteritis may not have a job to return to. The lack of job protection in these three provinces and territories, as well as the extremely short job protection in Nova Scotia, Manitoba and Prince Edward Island, places workers’ health at risk, as well as the health of those with whom they come into contact at work. It increases the probability that nursing home workers, food service workers and other individuals involved in service positions will come to work sick. The lack of job protection decreases the likelihood that employed adults will be able to receive prompt care. While the federal guarantee of sick leave insurance is a valuable step, it does not provide any job protection and provides no pay for short-term illnesses.

When it comes to major illnesses, social insurance is critical to prevent individuals from falling into poverty when cancer and other major illnesses strike. Canada’s provision of barely over half-pay for 15 weeks is low by global standards. Even when some families have substantial savings, it is likely to put many other low- and moderate-income families at financial risk and to be a cause of bankruptcy, housing loss and other large economic impacts. Limited insurance is also likely to restrict the ability of individuals with major illnesses to afford medicines and elements of the care they need to pay for, even within the context of the Canadian publicly financed health care system.

In contrast, Canada’s policies allowing employees to take leave to care for family members’ life-threatening illnesses are strong in other provinces and territories, as well as the extremely short job protection in Nova Scotia, Manitoba and Prince Edward Island, places workers’ health at risk, as well as the health of those with whom they come into contact at work. It increases the probability that nursing home workers, food service workers and other individuals involved in service positions will come to work sick. The lack of job protection decreases the likelihood that employed adults will be able to receive prompt care. While the federal guarantee of sick leave insurance is a valuable step, it does not provide any job protection and provides no pay for short-term illnesses.

When it comes to major illnesses, social insurance is critical to prevent individuals from falling into poverty when cancer and other major illnesses strike. Canada’s provision of barely over half-pay for 15 weeks is low by global standards. Even when some families have substantial savings, it is likely to put many other low- and moderate-income families at financial risk and to be a cause of bankruptcy, housing loss and other large economic impacts. Limited insurance is also likely to restrict the ability of individuals with major illnesses to afford medicines and elements of the care they need to pay for, even within the context of the Canadian publicly financed health care system.

In contrast, Canada’s policies allowing employees to take leave to care for family members’ life-threatening illnesses are strong in a

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1. Federally, 15 weeks of maternity benefits are for the mother to recover from the physical effects of childbirth; thirty-five (35) weeks of parental benefits can be used by one parent (mother or father) or shared between both.
3. Workers must accumulate 600 hours (or for the self-employed, $6,000) of insured work in the previous 52 weeks to be eligible for EI special benefits, including maternity, parental, sickness, and compassionate care.

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global context. Providing six weeks of paid leave renewable every 26 weeks, Canada is ahead of many affluent nations and is certainly ahead of the majority of the world. In terms of leave to care for family members more broadly, there are two limitations: first, Alberta guarantees no job protection even for life-threatening family illnesses, and, second, the length of leave available to care for a child or aging parent with a non-life-threatening illness is quite variable by province. It is critical that all working adults be able to take at least a modest amount of leave from work to care for their family's health without risking job loss.

Recent changes in Canada's EI program have increased access to parental leave by establishing a mechanism to offer parental leave benefits to self-employed workers beginning in 2011.4 This will fill one important gap. While parental leave is of adequate duration, the low wage replacement rate for parental leave in Canada (outside of Quebec) still needs to be addressed, as it limits access to those without financial reserves.

The evidence that social conditions play a significant role in public health is strong. One of the ways that we can most readily improve the health of Canadians is by improving labour conditions. Guaranteeing adequate paid sick and family leave for working adults across the country is one of the most affordable ways for us to rapidly improve the ability of Canadians to meet their own health needs and those of their young, aging, or disabled family members.


REFERENCES


RÉSUMÉ

Objectifs : Deux tiers des adultes canadiens se trouvent sur le marché du travail. Leur santé et celle de leur famille pourraient sensiblement être affectées par la disponibilité de congés de maladie payés, de congés payés permettant de prendre soin de la santé d’un parent et de congés parentaux rémunérés.


Résultats : Alors que le Canada verse des prestations de maladie pendant 15 semaines pour les maladies graves, on trouve à l’échelle mondiale au moins 90 pays versant de telles prestations pendant au moins 26 semaines ou encore jusqu’à la guérison. En outre, à travers le Canada, ce n’est qu’en Saskatchewan et au Québec que l’on offre une garantie de protection de l’emploi si le congé de maladie dure plus de 12 jours.

Le gouvernement fédéral garantit aux travailleurs canadiens six semaines de congé payé pour fournir des soins ou du soutien aux membres de leur famille gravement malades. Seulement 39 pays garantissent de tels congés payés. La plupart des provinces – mais pas toutes – garantissent aux travailleurs la protection de l’emploi pendant le congé de compassion.

Les conditions d’accès à la protection de l’emploi durant le congé parental varie à travers le Canada, allant d’aucune restriction à l’exigence d’au moins une année de service.

Conclusion : Par rapport au Canada, de nombreux pays offrent un plus long congé de maladie payé pour les employés et remplacent un pourcentage plus élevé de perte de salaire. À l’échelle internationale, le Canada perfore bien en ce qui a trait aux politiques garantissant un congé payé pour prendre soin de personnes à charge gravement malades, mais il accuse du retard au niveau des congés payés pour s’occuper des besoins en santé des enfants ou des membres de la famille souffrant de conditions moins graves. Enfin, bien que le congé parental soit d’une durée adéquate, le taux de remplacement salarial offert limite son accessibilité aux familles à faibles revenus.

Mots clés : congé de maladie; congé familial; congé parental; politique publique; étude comparative; gouvernement provincial
Access to Workers’ Compensation Benefits and Other Legal Protections for Work-related Mental Health Problems: A Canadian Overview

Katherine Lippel, LL.L., LL.M.,1 Anette Sikka, BA, LL.B.2

ABSTRACT

This article reports on a study of the legal and policy framework governing access, in Canada, to workers’ compensation benefits for workers who are work disabled because of mental health problems attributable to stressful working conditions and events. It also provides a brief description of legislation regulating psychological harassment in Quebec and Saskatchewan.

Applying classic legal methodology, the article examines the legal situation in Canada, relying on federal and provincial legislation and case law. While many of the jurisdictions studied explicitly restrict compensability to the consequences of traumatic incidents, application of this legislation is very different from one province to the next. In some provinces, legal exclusions are applied emphatically, whereas in others the workers’ compensation appeal tribunals interpret the legislative exclusions much more narrowly, allowing for some access to compensation despite the legislative exclusions. Other provinces have no such exclusions and accept claims for both acute and chronic stress, although access to compensation remains more difficult for claimants with mental health problems than for those who are physically injured, regardless of where they live.

The article concludes by offering an analysis of the consequences of the current situation from a public policy and public health perspective, notably underlining the negative consequences, particularly for women, of current workers’ compensation policy in most Canadian provinces.

Key words: Workers’ compensation; psychosocial risk factors; mental health problems; psychological harassment; legislation

Workers’ compensation in Canada

Mental health problems are a significant source of disability in Canada,1,3 and many mental health problems are attributable, in whole or in part, to stressful working conditions.1 Workplace violence, notably in health care facilities,4,6 the hospitality industry and schools,7 is a significant cause of disability, both physical and mental.8,9 Psychological harassment10,11 and organizational factors3,10,12 have been linked to an increase in mental health problems but also to physical violence.6 Women are disproportionately affected by psychosocial risk factors,3,12 including psychological harassment.13 Some mental health problems are attributable to acutely traumatic, stressful events, often associated with workplace crime or violent accidents, hereinafter referred to as “acute stress” claims, whereas others develop more insidiously over time, hereinafter referred to as “chronic stress” claims. As we shall see, the nature of the stressful situation has a significant impact on access to economic support in many Canadian jurisdictions.

This paper addresses major policy issues governing protection for people who may be work disabled because of mental health problems arising from stressful work situations or conditions. It relies on classic legal methodology to examine the application of legislation, in Canada, that provides economic support for workers with mental health problems attributable to work-related stressors;1 it then describes regulatory frameworks recently introduced to provide protection and recourse for workers who are harassed at work.2

Workers’ compensation in Canada

Government, society and the business community have long accepted the legitimacy of regulatory interventions to protect workers’ health from risks attributable to working conditions. Employers are required to assume the costs of disability attributable to work-related hazards, as they control working conditions and are in the best position to redistribute those costs to the consumers of their products. In Canada,14 as is the case in other OECD (Organisation for Economic Co-operation and Development) countries, workers’ compensation systems are the oldest social security programs, dating back to 1909 in Quebec15 and 1914 in Ontario.16 Canadian workers’ compensation legislation is said to be the subject of a historic compromise: workers have access to benefits regardless of evidence of fault, and employers are protected from law suits brought by their workers. This legislation thus replaces civil liability rules and was originally designed to remove litigation and blame laying from the workplace.15,16

In Canada, workers’ compensation is governed by provincial legislation, with the exception of coverage for workers who are employed by the federal government or federal agencies, whose claims are governed by the Government Employees Compensation Act.4 Federal legislation provides for coverage of employees according to
entitlement rules provided for under the law of the province where the employee is usually employed, but includes a general definition of coverage. Thus 14 different sets of rules govern access to compensation in Canada, and it has been held on several occasions that employees of the federal government will not be subject to the statutory exclusions in provincial legislation, given that the federal Act provides for no such exclusion.  

In the late 1980s, no Canadian workers’ compensation legislation explicitly addressed compensation for mental health problems, although some provinces, like Saskatchewan, had developed policy applicable to such claims. 1 General rules governing disability arising out of employment were applied to “stress claims”, and tribunals – notably in Quebec and Ontario – had accepted compensation claims not only for acute stress but also for situations associated with chronic stress, including harassment and overwork. 17 Then, as now, workers’ compensation laws in many US states covered both acute and chronic stress claims, although the rules varied considerably from state to state. 18 All compensation boards in Canada were preoccupied, at that time, by the danger of “opening the floodgates” if the right to compensation for work-related mental health problems were to be recognized. 19

In 2010, while legislation in all provinces acknowledges the right to compensation for workers who have mental health problems attributable to an acutely stressful situation, many provinces have explicitly excluded access to compensation for mental health problems associated with non-acute exposures to stress.

Provinces with Exclusionary Provisions
Between 1992 and 2002, several provinces, starting with Manitoba and followed by New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Ontario and British Columbia, modified their legislation to exclude protection for workers disabled because of mental health problems attributable to stress that was not acutely traumatic. Policy in most provinces also expanded on potential reasons for exclusion. For instance, New Brunswick compensation board policy explicitly excludes claims arising from “a decision of the worker’s employer relating to the management and monitoring of the worker’s employment” (section 2.3). It also excludes events that were not “unusual and excessive in comparison to the work-related events or stressors experienced by an average worker in the same or similar occupation”. When the latter applies, coverage is denied to those workers who are the most often exposed to stressful situations. These policy-based exclusions have sometimes been upheld by the courts. However, the fact that the B.C. statute provides for restrictive access to compensation for people with mental health problems has been challenged on the basis of human rights legislation, and a recent judgement of the B.C. Court of Appeal has held that the restrictive policy requirements in the province are a violation of the equality provisions of the Canadian Charter of Rights and Freedoms and constitute discrimination on the basis of mental disability. While the facts of that case did not apply to the section of the Act that excludes chronic stress (the complainant had been exposed to an acutely traumatic event), the reasoning of the Court of Appeal is most relevant to the constitutionality of the exclusion of chronic stress.

Despite very similar legal language used in the legislation of the various provinces that have adopted such exclusions, case law shows a surprising variation in the ways in which these provisions have been interpreted and applied, perhaps because of variations in policy, not sanctioned by the provincial legislature but implemented on the initiative of the compensation board. In New Brunswick, involvement in a car accident was considered to be a traumatic event, even though the worker did not suffer physical injury, and the fact that the worker had previously suffered from personal problems was not an obstacle to compensation. Yet a claim by a sheriff’s officer who was traumatized when he tried to prevent a suicidal individual from jumping from the 12th floor of a building was denied because he was “specifically trained to deal with crisis of this type”. In Nova Scotia, a worker vulnerable to anxiety developed post-traumatic stress disorder after being reprimanded by his supervisor. His claim was accepted in appeal because it was “something other than the commonplace workplace experiences of the particular worker”, and similar con-

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2 Workers Compensation Act, C.C.S.M., c. W200, s. 1.1, “occupational disease … does not include stress, other than an acute reaction to a traumatic event”. 3 Workers’ Compensation Act, R.S.N.B. 1973, c. W-13, as amended in the early nineties, now reads: “accident” … does not include the disablement of mental stress or a disablement caused by mental stress, other than as an acute reaction to a traumatic event”. 4 Workplace Health, Safety and Compensation Act, R.S.N.L. 1990 c. W-11 “does not include stress other than stress that is an acute reaction to a sudden and unexpected traumatic event”. The Act also specifically notes that industrial relations decisions cannot be the cause of injuries: 2(2) “Notwithstanding paragraphs (1)(o), stress that may be the result of an employer’s decision or action relating to the employment of a worker including a decision to change the work to be performed or the working conditions, to discipline the worker or to terminate the worker’s employment does not constitute an injury”. 5 Workers’ Compensation Act, 1994-95, R.S.N.S., c. 10, s. 1. “accident … does not include stress other than an acute reaction to a traumatic event”. 6 Workers Compensation Act, R.S.P.E.I. 1988, c. W-7.1, s. 6 now reads: “The definition “accident” … does not include stress other than an acute reaction to a traumatic event”. 7 Workplace Safety and Insurance Act, 1997, S.O. 1997, c. 16, s. 13(4) and (5): “a worker is entitled to benefits for mental stress that is an acute reaction to a sudden and unexpected traumatic event arising out of and in the course of his or her employment. However the worker is not entitled to benefits for mental stress caused by his or her employer’s decision or actions relating to the worker’s employment, including a decision to change the work to be performed or the working conditions, to discipline the worker or to terminate employment.”

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Workers’ Compensation for Mental Health Problems


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clusions have been drawn under the Ontario legislation, although trauma associated with a threat of dismissal was not compensable under the Act. Mental health problems attributable to circumstances that could meet the definition of psychological harassment have been accepted as compensable in Newfoundland and Ontario but refused in New Brunswick and British Columbia. Case law in Ontario has restricted access to compensation to those cases in which the harassment was “significant.” In B.C., case law is so restrictive that the depression and severe anxiety of a school teacher who was subject to a series of stressors and harassing behaviours culminating in death threats were held not to be compensable illnesses, as “Mental stress that arises cumulatively from a series of events is not what the statute and the policy intended to compensate for.” A nurse who developed mental health problems after being the subject of abuse and threats of assault, sufficiently serious to warrant police intervention, by a patient’s family was not compensated because there was insufficient evidence that “the event between the worker and the patient’s relative [was] consistent with the examples cited in policy.”

Smaller provinces have generated little case law, but a significant body of case law has developed in Ontario and British Columbia, including several successful claims rendered before the legislative changes. Since the restrictive definitions were introduced, few publications have addressed this issue in the legal or policy literature. An Ontarian overview has suggested that statutory provisions excluding access to compensation for chronic stress claimants may be discriminatory and unconstitutional, a finding that certainly seems supported by the reasoning applied in a recent decision of the B.C. Court of Appeal.

Provinces without Exclusionary Provisions

Quebec, Saskatchewan, Alberta, the North West Territories, Nunavut and the Yukon made no such exclusion, and in 2010 claims for both acute and chronic stress may be filed in these jurisdictions. Workers who have suffered from mental health problems related to chronically stressful situations such as psychological harassment have been compensated in the Yukon, Saskatchewan and Quebec, although in all jurisdictions evidence of disability and work-relatedness is essential, and cases involving labour relations issues are treated under more stringent criteria. Protection from grievances, human rights complaints and other lawsuits brought by workers claiming to be psychologically harassed has been granted to employers both in Saskatchewan and Quebec. Quebec has been compensating for chronic stress claims for years and has accepted claims under the definition of both occupational disease and industrial accident, although the vast majority of accepted claims, even for chronic stress, are accepted under the provision governing industrial accidents.

Where legislation allows for chronic stress claims, case law and sometimes policy have consistently insisted on evidence that the workplace stressors be unusual, although it is not always clear what the point of comparison should be. While case law in some provinces has looked to the average workplace in a specific industry as a point of comparison, in Quebec circumstances must go beyond what would be expected in the average workplace. This interpretation is preferable if protection is to be provided to those in the most hazardous work sectors.

In Quebec, the province with the largest number of claims for mental health problems, it is impossible to access data that distinguish clearly between acute stress and chronic stress, as there is no reason for the Commission de la santé et de la sécurité du travail (CSST, the Occupational Health and Safety Commission) to make that distinction, given that the legal framework itself does not distinguish between acute and chronic stress. Two sources, however, allow us consider claims data in a way that is useful to understanding adjudication practices relating to mental stress claims. Figure 1 provides a portrait of CSST claims data, classified by diagnosis, covering the period 2004 to 2007. The categories available for analysis are “Nervous shock (post-traumatic stress disorder)”, “Anxiety, stress, neurotic disorders”, “Burnout”, “Depressive states”, “Adaptation disorders” and a few other diagnoses that each include between zero and five claims, depending on the year: “Psychological decompensation”, “Mental syndrome disorder”, “Organic mental disorder”, and “Mental disorder attributable to a toxic substance”. Because the last four categories altogether included between three and seven claims during the four years analyzed, we have not excluded them from the category “Other diagnoses” that appears in Figure 1. While not a perfect fit, it is reasonable to assume that the diagnosis of “Nervous shock-PTSD” is usually reflective of exposure to an acutely traumatic event, so it may serve as a proxy for acute stress claims. However, it is likely that this underestimate the number of acute stress claims, as it is quite probable that diagnoses associated with acutely stressful incidents could also be found in the “Other” category (including depression, anxiety disorders). It is far less likely that cases of chronic stress are included in the diagnostic category “Nervous shock...”

During the period between 2004 and 2007, acceptance rates for claims for “nervous shock” averaged 79%, varying between a high of 80% in 2004 and a low of 78.2% in 2006, and acceptance rates for all other mental health diagnoses averaged 23%, varying between 26.1% in 2004 and 20.6% in 2007.

A second source of information about compensation for mental health problems is available through analysis of the CSST annual reports on compensation for violence, a category that includes physical violence, sexual harassment and psychological harassment. As explained in the introduction to the most recent report dated 2009, the CSST revised its methods for keeping statistics on these issues, and the report warns that statistics before June 2004 are unreliable, as data concerning refused claims were incomplete. This would lead the reader to expect larger numbers of claims after the systematic inclusion of the refused claims, yet the revised tables drastically reduce the number of claims for psychological injuries attributable to violence, and the numbers of claims for physical violence remain the same in the two reports. Thus, in Table 10 of the 2008 report an average of 2,467 claims for violence causing psychological injury are identified for 2004-2006. In Table 10 of the 2009 report an average of 1,246 claims for the same category and the same years are identified, about half the number identified in the previous report. Although the more recent report does not explain this discrepancy, it is plausible that the definition of violence has been reshaped between the two reports, leading to the exclusion of cases included in the previous report. This gives rise to some intriguing comparisons. In both the CSST violence reports, it is clear that claims for physical injury are accepted at a higher rate than claims for psychological injuries. Here, we only examine the years 2004-2006, as data for these years are treated in both reports. In the 2008 report (Table 17), the success rates for claims related to physical disability arising from violent incidents ranged between 94% and 96% during these years, whereas acceptance rates for claims for psychological injury attributable to violent incidents ranged between 31% and 35% (Table 10). In the 2009 report (Table 17), although claims for physical injury attributable to workplace violence (2004-2006) were accepted at the same rate as in the previous report, claims for psychological injury (Table 10) are reported to have been accepted at a much higher rate than previously, varying between 53% (2006) and 61% (2004).

In the 2009 report (Table 10), between 2004 and 2007 an average of 682 claims were accepted for mental health problems attributable to violence, and an average of 1,095 claims for physical injury attributable to violence were accepted (Table 17). An average of 70 claims for psychological harassment and 14 claims for sexual harassment were accepted annually during that period (Table 3), but no information is available in either this or the 2008 report with regard to the number of such claims that were denied, and one wonders if the “missing cases” might simply have been removed from the category “psychological harassment” if they were denied, thus disappearing from the purview of the report on violence. The number of accepted claims in these categories seems remarkably low, given that thousands of claims for psychological harassment are filed annually at the Employment Standards Commission, and that many of those claimants are absent from work for health reasons at the time of filing.

It should be noted that, for previous periods, success rates for claims for chronic stress are far higher before the appeal tribunal than in the first instance.

Workers’ compensation for psychological disability is difficult to access, even in those provinces that have no explicit legislative restrictions. Aside from mental health problems associated with acutely violent incidents, it appears necessary to address the appeal tribunal when seeking access to compensation, even in Quebec, which has historically been more open to this type of claim. Quebec data show that access to compensation for mental health problems has not “opened floodgates” in that province. Analysis of the data in Figure 1 in light of the 2007 annual report of the CSST shows that the claims for mental health diagnoses associated with workplace stress (primary claims) represented 3.2% of total claims and 1.1% of compensated claims in that year.

In most Canadian jurisdictions, workers’ compensation systems provide leverage for prevention incentives because experience-rating systems increase costs to employers as the frequency and costs of compensated claims increase. If mental health problems are invisible to those systems, as they are, in particular, in those provinces that have excluded chronic stress from the purview of their legislation, legal incentives for prevention are minimal.

In the next section we will examine legislation designed to promote prevention of psychological harassment in the workplace.

Recent legislative developments relating to psychological harassment

As we have shown, Quebec and Saskatchewan were the first jurisdictions to acknowledge compensability of mental health problems related to chronic stress, so it is perhaps not surprising that they were also the first jurisdictions to enact legislation on psychological harassment.

Increased concern about psychological violence, including harassment and bullying, has sparked a broad range of legislative prevention strategies around the world. The first legislation specifically addressing mobbing was adopted in Sweden in 1993, and since then several countries, including France (2002), Belgium (2002), Finland (2002) and South Australia (2005), to name only a few, have introduced legal frameworks targeting prevention of harassment, bullying and mobbing. In Canada, Quebec, whose legislation has been in force since 2004, was the first province to regulate prevention of psychological harassment, followed in 2007 by Saskatchewan.

While not specifically addressing psychological harassment, federal regulations now require risk assessments to prevent violence in the workplace and explicitly acknowledge psychological harassment to be a cause of workplace violence. In December 2009, Ontario introduced provisions on violence and harassment to the Occupational Health and Safety Act, which will come into force in June 2010.

Quebec legislation defines psychological harassment in the following terms: “Any vexatious behaviour in the form of repeated...”

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**Notes:**

- S.Q. c. 80.
- S. 2002, c. 111, s. 113.1.
- Occupational Health and Safety Act, R.S.Q. c. C.6, s. 107.1.1.
- s. 107.1.1, 2007 S.S. c. 34.
and hostile or unwanted conduct, verbal comments, actions or gestures, that affects an employee’s dignity or psychological or physical integrity and that results in a harmful work environment for the employee. A single serious incident of such behaviour that has a lasting harmful effect on an employee may also constitute psychological harassment." It provides for the right to a workplace free from harassment, defines employer obligations and prescribes remedies against the employer who fails to prevent harassment in the workplace. Access to recourse exists for all employees. The legal provisions are deemed to be part of all collective agreements, and unionized workers must go through their union and use the grievance procedure. Thus, labour arbitration is the primary recourse for unionized workers. For the non-unionized, complaints can be filed with the Commission des normes du travail (Employment Standards Commission [our translation]), which will represent the worker before the Commission des relations de travail (Labour Relations Commission [our translation]) if the claim is deemed to be well founded. Remedies include orders providing for reinstatement of the harassed worker, requiring reasonable action to put a stop to harassment, and providing for modification of disciplinary orders and indemnities for loss of employment. If the worker has not fallen ill because of the harassment, monetary damages can be granted for lost wages, punitive and moral damages, and payment for psychological support. If the worker has become ill, the sole recourse for damages related to work disability is under workers’ compensation legislation.29

More than 2,000 complaints for psychological harassment have been filed annually at the Commission des normes du travail by non-unionized workers since the coming into force of the legislation;26 figures for unionized workers are unavailable.

In October 2007, amendments to Saskatchewan legislation that explicitly require prevention of psychological harassment came into force. Building on previous provisions regarding discriminatory harassment, sections 2(1) and 2(3) of the Occupational Health and Safety Act now provide that “harassment means any inappropriate conduct, comment, display, action or gesture by a person that adversely affects the worker’s psychological or physical well-being and that the person knows or ought reasonably to know would cause a worker to be humiliated or intimidated; and that constitutes a threat to the health of the worker.... To constitute harassment...repeated conduct, comments, displays, actions or gestures must be established; or a single serious occurrence of conduct, or a single, serious comment, display, action or gesture, that has a lasting, harmful effect on the worker must be established.” The legislation provides for mechanisms for intervention by occupational health officers and intervention in appeal to special adjudicators, who will meet with the parties, attempt mediation and conciliation and, if all else fails, render a decision.

The Ontario legislation is designed to promote risk assessments and prevention measures but does not provide recourse for the individual worker who is the victim of violence or harassment. It covers physical violence and workplace harassment, and also introduces obligations for employers with regard to domestic violence that is likely to expose a worker to physical violence in the workplace. The definition of “workplace harassment” is broader than that of other provinces, as it “means engaging in a course of vexatious comment or conduct against a worker in a workplace that is known or ought reasonably to be known to be unwelcome”. However, most provisions address workplace violence without addressing workplace harassment, which is not included in the definition of violence. The legislation specifies that the right to refuse to work may apply when there is danger of physical violence but, contrary to the case in Quebec,91 does not allow for the right to refuse in cases of harassment.

CONCLUSION

Access to workers’ compensation benefits provides a first step in making visible to the business community and policy makers the extent to which mental health problems are associated with working conditions. Statistical portraits have been linking psychosocial risk factors at work to mental health problems for years, yet little progress in prevention seems to have been made.12 In those provinces like Quebec, where chronic stress is acknowledged as a potential source of compensable disability, research priorities and prevention strategies have also been more specifically targeted at working conditions and work organization.30

Even when workers’ compensation legislation excludes coverage for chronic stress, litigation regarding psychological harassment and other chronic stressors nevertheless continues, before arbitration tribunals, the courts and even before the workers’ compensation appeal tribunals. In late 2008, the Superior Court of Ontariordered an employer and a supervisor to pay a harassed worker and her partner over $500,000 in damages (compensatory, moral and punitive) for intentional infliction of emotional distress. The court found the employer owed a duty to the worker to provide her with a harassment-free environment and that the employer had failed to do so; the worker had been on sick leave as a result of the harassment, and the employer and the harasser were ordered to pay not only damages but the costs of the litigation, amounting to an additional $225,000.96

Exclusion from workers’ compensation coverage for this type of disability has significant consequences for the health of workers: withdrawal from work is often delayed, delaying access to care for those needing to be followed by a psychologist and exacerbating the health consequences associated with continued exposure to chronic stressors. Rehabilitation programs provided by workers’ compensation legislation are not available, thus prolonging exclusion from the workplace and potentially increasing work disability. Economic incentives, embedded in the workers’ compensation system to promote prevention and support to ensure successful return to work, do not apply, and workers with mental health problems are left to their own devices without the support that is provided to their colleagues suffering from physical health problems related to work. Even in provinces where coverage is available, there is evidence that access to compensation is more difficult for those with mental health problems and that it is often necessary to litigate in order to access support. In all cases in which workers need to struggle to access income support while they are disabled by work-related mental health problems, perceptions of unfairness can exacerbate those health problems.31

Exclusion of mental health problems attributable to workplace exposures from the workers’ compensation systems also has con-
From a public health perspective, reduction of obstacles associated with the compensation process would promote a more speedy access to services and benefits delivered in a timely manner. It would also provide a clear incentive to reduce workplace psychosocial risk factors. The Quebec example shows that floodgates would not open were those provinces with exclusionary provisions in their legislation and policy to eliminate those obstacles. The health of Quebec workers could also be favourably affected by reducing the necessity for litigation associated with appeals, litigation frequently required to ensure that there is access to workers’ compensation benefits for mental health problems.

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66.
RÉSUMÉ
Nous faisons le compte rendu d’une étude du cadre juridique et politique qui régie l’accès, au Canada, aux indemnités pour lésions professionnelles versées aux travailleurs qui doivent s’absenter pour des problèmes de santé mentale imputés à des incidents ou des conditions de travail stressants. Nous donnons aussi une brève description des lois sur le harcèlement psychologique en vigueur au Québec et en Saskatchewan.

Selon une méthodologie juridique classique, nous examinons la situation juridique au Canada d’après les lois et les décisions des tribunaux administratifs des administrations fédérales et provinciales. Bon nombre des administrations à l’étude limitent expressément le versement d’indemnités aux victimes d’incidents traumatisants, mais l’application des lois diffère beaucoup d’une province à l’autre. Dans certaines provinces, les exclusions législatives sont appliquées de façon péremptoire, tandis qu’ailleurs, les tribunaux d’appel des accidents du travail interprètent ces exclusions beaucoup plus étroitement, en ouvrant l’accès à l’indemnisation. D’autres provinces n’ont aucune exclusion de la sorte et acceptent les demandes d’indemnisation en cas de stress aigu et de stress chronique. Malgré tout, l’accès aux indemnités demeure plus difficile pour les travailleurs atteints de problèmes de santé mentale que pour ceux qui ont subi des lésions physiques, peu importe l’endroit où ils vivent.

Nous concluons par une analyse des conséquences de la situation actuelle du point de vue des politiques publiques et de la santé publique, en soulignant notamment les conséquences négatives, surtout pour les femmes, des politiques d’indemnisation des accidents du travail en vigueur dans la plupart des provinces canadiennes.

Mots clés : indemnisation des lésions professionnelles; facteurs de risque psychosociaux; santé mentale; harcèlement psychologique; législation
Contraintes psychosociales de travail et problèmes de santé mentale au Québec : une analyse différenciée selon le sexe

Michel Vézina, MD, MPH, Renée Bourbonnais, PhD, Alain Marchand, PhD, Robert Arcand, MSc

RÉSUMÉ

Objectif : L’objectif de l’étude est de faire une analyse différenciée selon le sexe des liens entre certaines contraintes psychosociales du travail et certains problèmes de santé mentale au Québec.

Méthodes : L’étude comprend 2 877 travailleurs, avec un taux de réponse de 78 %. La collecte des données a été réalisée au moyen d’entrevues assistées par ordinateur, en face à face principalement. Les problèmes de santé mentale retenus dans le modèle ont été : la détresse psychologique, l’épisode dépressif majeur, et un score positif à l’indice global de dépression. Les contraintes psychosociales mesurées ont été : le degré de latitude décisionnelle et de demande psychologique au travail et l’importance du soutien social. Un ensemble de caractéristiques professionnelles et personnelles ont également été mesurées.

Résultats : Au total, 41 % des travailleurs au Québec sont exposés à une faible autorité décisionnelle et 46 % à une faible utilisation de leurs compétences au travail. De plus, 45 % d’entre eux rapportent avoir un faible soutien social et 40 % une forte demande psychologique au travail. Les résultats montrent également que 25 % de la population à l’étude présentaient un niveau de détresse psychologique au cours du mois précédant l’enquête et qu’au cours des 12 derniers mois, 4 % avaient présenté un épisode dépressif majeur et 6,4 % un score positif à l’indice global de dépression. Ces indicateurs apparaissent plus défavorables aux femmes qu’aux hommes. Les résultats des analyses multivariées montrent par ailleurs que, chez les femmes, la dimension faible compétence de la latitude décisionnelle apparaît de façon surprenante comme un facteur de protection d’un épisode dépressif majeur.

Conclusion : Les raisons pouvant expliquer ces différences entre les sexes sont discutées et ont trait notamment à des conditions de travail plus défavorables, à la double tâche et à un rapport au travail différent pour les femmes comparativement aux hommes.

Mots clés : organisation du travail; stress; santé mentale; conditions de travail; santé des femmes

The translation of the Abstract appears at the end of this article.

L e travail a connu au cours des dernières décennies de profondes transformations caractérisées surtout par une intensification du travail et une précarisation des emplois1. Parallèlement à ces bouleversements, est apparue une augmentation des incapacités de travail de courte et de longue durée liées à des lésions psychiques2,3. Par ailleurs, les résultats de nombreuses recherches scientifiques nous indiquent qu’il existe des liens étroits entre certaines dimensions de l’organisation du travail, telles des demandes psychologiques élevées, une faible autonomie ou un faible soutien au travail et les problèmes de santé mentale15,16. La faible reconnaissance au travail a également été associée aux problèmes de santé mentale15,16.

L’objectif de cette étude est de documenter les liens entre ces contraintes psychosociales au travail et certains problèmes de santé mentale au Québec, et ce, en en faisant une analyse différenciée selon le sexe, à partir des données du cycle 1.2 de l’Enquête sur la santé dans les collectivités canadiennes (ESCC) portant sur la santé mentale et le bien-être et réalisée en 200217. L’utilisation de ces données apparaît intéressante, car elle permet de vérifier si les constats issus des recherches scientifiques internationales s’appliquent à l’ensemble des travailleurs québécois. De plus, l’analyse de ces données permet d’établir des valeurs de référence pour les études effectuées chez les travailleurs québécois.

MÉTHODES

La population étudiée est celle des personnes de 15 à 75 ans qui, au cours des sept jours précédant l’enquête, avaient un travail rémunéré à titre de salarié ou de travailleur autonome. Au total, 2 877 travailleurs ont répondu à l’enquête pour un taux de participation de 78 %. La collecte des données a été réalisée en personne de mai à novembre 2002 au moyen d’entrevues assistées par ordinateur, en face à face principalement.

Méthodes d’analyse

L’association entre les contraintes psychosociales, les caractéristiques professionnelles et personnelles et chacun des problèmes de santé mentale retenus a été étudiée à l’aide d’analyses bivariées. Le test du khi-carré, effectué au seuil de 0,05, a été utilisé pour la comparaison de proportions entre différents sous-groupes à partir d’un tableau de fréquences pondérées. La pondération tient compte de la probabilité de sélection, de la non-réponse et de la distribution âge-sexe de la population. L’effet du plan de sondage sur la précision des estimations est également pris en compte.

Pour chacune des variables dont l’association avec un problème de santé mentale s’est révélée statistiquement significative aux analyses bivariées, des modèles de régression logistique multivariées ont permis d’étudier la relation entre chacun des indicateurs de santé mentale et les contraintes psychosociales de travail, en tenant compte des caractéristiques professionnelles et personnelles. Les informations présentées dans cet article sont issues des analyses de l’enquête sur la santé dans les collectivités canadiennes (cycle 1.2), réalisées par les auteurs et publiées par l’Institut de la statistique du Québec (ISQ) sous le titre « Stress et santé mentale chez les adultes Québécois ». http://www.stat.gouv.qc.ca/publications/sante/stress_travail.htm

Conflit d’intérêts : Aucun à déclarer.
Définition des indicateurs

Problèmes de santé mentale

Les problèmes de santé mentale retenus ont été évalués à l’aide des indicateurs suivants : l’indice dépressif majeur, l’indice global de dépression et la détresse psychologique. L’indice dépressif majeur consiste en une période de deux semaines ou plus, au cours des douze derniers mois, durant laquelle persiste une humeur dépressive ou une perte d’intérêt ou de plaisir pour des activités normales, associée à au moins cinq des symptômes suivants : une réduction de l’énergie, un changement sur le plan du sommeil ou de l’appétit, des difficultés à se concentrer, un sentiment de culpabilité ou de désespoir ou des idées suicidaires. L’indice global de dépression mesure la présence, au cours des douze derniers mois, d’un épisode dépressif majeur, de pensées suicidaires ou d’une tentative de suicide. Enfin, la mesure de la détresse psychologique se fait au moyen de l’échelle K6 qui établit à quelle fréquence, au cours du dernier mois, la personne s’est sentie nerveuse, désespérée, agitée, déprimée, bonne à rien ou, finalement, avait l’impression que tout lui demandait un effort. Un score égal ou supérieur à 5 indique un niveau de détresse psychologique élevé.

Caractéristiques professionnelles

Les variables suivantes ont été mesurées :

- l’autonomie décisionnelle en deux dimensions, soit l’autonomie de compétence (Votre travail exigeait l’acquisition de nouvelles connaissances; Votre travail exigeait un niveau élevé de compétences; Votre travail consistait à refaire toujours les mêmes choses) et l’autorité décisionnelle (Vous étiez libre de décider de votre façon de travailler; Vous aviez votre mot à dire sur l’évolution de votre travail);
- la demande psychologique (Votre travail était frénétique; Vous n’aviez pas à répondre à des demandes conflictuelles);
- le soutien social (Vous étiez exposé à l’hostilité ou aux conflits de vos collègues; Votre surveillant facilitait l’exécution du travail; Vos collègues facilitaient l’exécution du travail).

Pour la faible autonomie décisionnelle (autorité ou compétence), la forte demande psychologique et le faible soutien social, les personnes exposées sont celles dont le score est supérieur à la médiane de la population.

D’autres caractéristiques professionnelles reconnues comme étant liées aux contraintes psychosociales de travail ont également été mesurées. Il s’agit du nombre d’heures travaillées par semaine, du nombre de semaines en emploi durant l’année, du fait d’avoir plus d’un employeur et de celui de travailler à son compte.

Caractéristiques personnelles

Outre le sexe et l’âge, le fait de vivre seul ou non, le revenu et la scolarité ont été considérés parmi les caractéristiques personnelles importantes ainsi que la présence de problèmes de santé chroniques.

RÉSULTATS

Tableau 1. Répartition de la population en emploi et de la population sans emploi selon diverses caractéristiques sociodémographiques, population de 15 à 75 ans, Québec, 2002

<table>
<thead>
<tr>
<th>Caractéristique</th>
<th>Population en emploi</th>
<th>Population sans emploi</th>
<th>Population totale</th>
</tr>
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<tbody>
<tr>
<td>Sexe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hommes*</td>
<td>54,4</td>
<td>40,2</td>
<td>49,5</td>
</tr>
<tr>
<td>Femmes*</td>
<td>45,6</td>
<td>59,8</td>
<td>50,5</td>
</tr>
<tr>
<td>Groupe d’âge (ans)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>15-24</td>
<td>16,5</td>
<td>17,1</td>
<td>16,7</td>
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<tr>
<td>25-44*</td>
<td>48,5</td>
<td>20,1</td>
<td>38,8</td>
</tr>
<tr>
<td>45-64</td>
<td>33,6</td>
<td>34,6</td>
<td>33,9</td>
</tr>
<tr>
<td>≥65*</td>
<td>1,4†</td>
<td>28,2</td>
<td>10,6</td>
</tr>
<tr>
<td>Type de ménage</td>
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<tr>
<td>Personne vivant seule*</td>
<td>12,2</td>
<td>18,3</td>
<td>14,3</td>
</tr>
<tr>
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<td>Famille monoparentale</td>
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<td>9,8</td>
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<tr>
<td>Autre</td>
<td>4,5</td>
<td>6,9†</td>
<td>5,3</td>
</tr>
<tr>
<td>Plus haut niveau de scolarité</td>
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<tr>
<td>Études secondaires partielles*</td>
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</table>

* Différence significative au seuil de 0,05 entre la population en emploi et la population sans emploi quant à cette caractéristique.
† Coefficient de variation entre 15 % et 25 %; interpréter avec prudence.
Compilation : Institut de la statistique du Québec.

Contraintes psychosociales de travail

La figure 1 montre que 46 % des travailleurs québécois rapportent une faible utilisation de leurs compétences au travail et 41 % une faible autorité décisionnelle. De plus, 40 % des travailleurs rapportent faire face à une forte demande psychologique au travail, et 45 % à un faible soutien social. On remarque de plus que les femmes rapportent plus souvent être exposées à la plupart des contraintes psychosociales mesurées; cependant, la différence n’est statistiquement significative que pour la faible autorité décisionnelle.

Problèmes de santé mentale

La figure 2 indique que 25 % de l’ensemble des travailleurs rapporte un niveau élevé de détresse psychologique au cours du mois précédant l’enquête; 4 % vivent un épisode dépressif majeur et 6 % montrent un indice global positif de dépression au cours des douze derniers mois. Il est à noter que les indicateurs de santé mentale apparaissent plus défavorables aux femmes qu’aux hommes.
Tableau 2. Modèles de régression logistique des liens entre la détresse psychologique (K6) et les contraintes psychosociales de travail et caractéristiques professionnelles et personnelles, population de 15 à 75 ans en emploi, Québec, 2002

<table>
<thead>
<tr>
<th>Caractéristiques</th>
<th>Hommes (n=1 425)</th>
<th>Femmes (n=1 299)</th>
<th>Total (n=2 724)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraintes psychosociales de travail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomie de compétence (faible)</td>
<td>1,17 (0,77-1,77)</td>
<td>1,45 (0,92-2,14)</td>
<td>1,29 (0,99-1,67)</td>
</tr>
<tr>
<td>Autorité décisionnelle (faible)</td>
<td>1,43 (0,98-2,09)</td>
<td>1,27 (0,85-1,89)</td>
<td>1,38 (1,06-1,79)</td>
</tr>
<tr>
<td>Demande psychologique (forte)</td>
<td>1,02 (0,69-1,49)</td>
<td>1,66 (1,14-2,41)</td>
<td>1,28 (1,00-1,64)</td>
</tr>
<tr>
<td>Soutien social (faible)</td>
<td>1,89 (1,29-2,78)</td>
<td>1,68 (1,15-2,46)</td>
<td>1,81 (1,41-2,35)</td>
</tr>
<tr>
<td>Efforts physiques (intenses)</td>
<td>1,38 (0,95-2,00)</td>
<td>1,24 (0,83-1,86)</td>
<td>1,33 (1,02-1,72)</td>
</tr>
<tr>
<td>Insécurité d’emploi (présence)</td>
<td>1,24 (0,79-1,94)</td>
<td>1,32 (0,83-2,07)</td>
<td>1,30 (0,96-1,76)</td>
</tr>
<tr>
<td>Caractéristiques professionnelles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nombre d’heures travaillées</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-20</td>
<td>1,00 (…)</td>
<td>1,00 (…)</td>
<td>1,00 (…)</td>
</tr>
<tr>
<td>21-34</td>
<td>0,55 (0,22-1,38)</td>
<td>1,20 (0,65-2,20)</td>
<td>0,95 (0,58-1,55)</td>
</tr>
<tr>
<td>35-40</td>
<td>1,05 (0,52-2,09)</td>
<td>1,18 (0,58-2,40)</td>
<td>1,42 (0,88-2,27)</td>
</tr>
<tr>
<td>&gt;41</td>
<td>1,07 (0,56-2,04)</td>
<td>1,88 (1,04-3,40)</td>
<td>1,50 (0,97-2,32)</td>
</tr>
<tr>
<td>Nombre de semaines en emploi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-26</td>
<td>1,07 (0,56-2,04)</td>
<td>1,88 (1,04-3,40)</td>
<td>1,50 (0,97-2,32)</td>
</tr>
<tr>
<td>27-51</td>
<td>0,88 (0,54-1,43)</td>
<td>0,83 (0,44-1,60)</td>
<td>0,87 (0,59-1,29)</td>
</tr>
<tr>
<td>52</td>
<td>1,00 (…)</td>
<td>1,00 (…)</td>
<td>1,00 (…)</td>
</tr>
<tr>
<td>Travaille à son compte (non)</td>
<td>0,86 (0,50-1,50)</td>
<td>1,26 (0,66-2,41)</td>
<td>1,03 (0,69-1,55)</td>
</tr>
<tr>
<td>Caractéristiques personnelles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type de ménage (vit seul)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,52 (1,07-2,17)</td>
<td>1,09 (0,69-1,73)</td>
<td>1,33 (1,01-1,75)</td>
<td></td>
</tr>
<tr>
<td>Plus haut niveau de scolarité</td>
<td>1,59 (1,10-2,30)</td>
<td>1,60 (1,02-2,52)</td>
<td>1,54 (1,16-2,05)</td>
</tr>
<tr>
<td>Études postsecondaires</td>
<td>0,90 (0,47-1,73)</td>
<td>0,97 (0,44-2,11)</td>
<td>0,97 (0,62-1,53)</td>
</tr>
<tr>
<td>Grade/diplôme d’études secondaires</td>
<td>0,98 (0,64-1,50)</td>
<td>0,61 (0,35-1,06)</td>
<td>0,80 (0,58-1,10)</td>
</tr>
<tr>
<td>Revenu du ménage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inférieur</td>
<td>1,00 (…)</td>
<td>1,00 (…)</td>
<td>1,00 (…)</td>
</tr>
<tr>
<td>Moyen inférieur</td>
<td>0,74 (0,35-1,55)</td>
<td>0,79 (0,33-1,85)</td>
<td>0,72 (0,42-1,26)</td>
</tr>
<tr>
<td>Moyen supérieur</td>
<td>0,73 (0,36-1,50)</td>
<td>0,50 (0,21-1,20)</td>
<td>0,60 (0,35-1,02)</td>
</tr>
<tr>
<td>Supérieur</td>
<td>0,70 (0,33-1,47)</td>
<td>0,52 (0,21-1,34)</td>
<td>0,61 (0,35-1,05)</td>
</tr>
<tr>
<td>Non déclaré</td>
<td>0,88 (0,29-2,66)</td>
<td>0,58 (0,19-1,81)</td>
<td>0,69 (0,34-1,42)</td>
</tr>
<tr>
<td>Âge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0,97 (0,96-0,98)</td>
<td>0,98 (0,96-1,00)</td>
<td>0,98 (0,97-0,99)</td>
<td></td>
</tr>
</tbody>
</table>

* Le RC de chacune des variables du modèle est ajusté pour toutes les autres. Lorsque le test global d’une variable (khi-carré ajusté) est significatif au seuil de 0,05, les RC significatifs sont indiqués en gras.

Compilation : Institut de la statistique du Québec.

Figure 1. Prévalence des contraintes psychosociales de travail, population de 15 à 75 ans en emploi, Québec, 2002

Figure 2. Prévalence des problèmes de santé mentale, population de 15 à 75 ans en emploi, selon le sexe, Québec, 2002

Les résultats des analyses multivariées sont présentés en fonction de chacune des contraintes psychosociales de travail (tableaux 2 à 4). Ainsi, on peut noter que la faible autonomie de compétence apparaît comme un facteur de protection d’un épisode dépressif majeur chez les femmes (tableau 3). Par ailleurs, la faible autorité décisionnelle est associée significativement à la détresse psychologique (tableau 2). Cette association ne diffère pas selon le sexe mais elle n’est pas détectée chez les hommes ou les femmes séparément. De plus, la faible autorité décisionnelle est associée chez les hommes à un risque accru de se classer « positif » à l’indice global de dépression (tableau 4).
La forte demande psychologique est associée à un niveau de détresse psychologique élevé, chez les femmes et chez l’ensemble de la population à l’étude.

Un faible soutien social au travail est associé à un risque accru de détresse psychologique, chez les deux sexes, alors que, pour l’épisode dépressif majeur, l’association n’est significative que chez les femmes et chez l’ensemble de la population à l’étude. En ce qui a trait à l’indice global de dépression, la relation observée chez l’ensemble des travailleurs n’est plus statistiquement significative lorsque les analyses sont faites séparément pour les hommes et pour les femmes.

Au regard des caractéristiques professionnelles, le fait de travailler entre 35 et 40 heures par semaine est associé, chez les femmes, à un risque deux fois plus élevé de détresse psychologique (tableau 2). De même, le fait de ne pas travailler à son compte est associé à un risque accru de se classer « positif » à l’indice global de dépression tandis que pour les femmes que pour l’ensemble de la population (tableau 4).

Au chapitre des caractéristiques personnelles, le fait de vivre seul est associé chez les hommes à la détresse psychologique, à un épisode dépressif majeur et à l’indice global positif de dépression. Par ailleurs, la présence d’un problème de santé chronique est liée, tant chez les hommes que chez les femmes, à la détresse psychologique et à l’indice global de dépression et, chez les femmes, s’ajoute également le lien avec un épisode dépressif majeur. Un âge plus élevé constitue un facteur de protection de la détresse psychologique chez les hommes et les femmes. Enfin, le fait d’être une femme augmente le risque d’un épisode dépressif majeur et de se classer « positif » à l’indice global de dépression, après ajustement pour les autres variables. Par contre, bien que la détresse psychologique soit plus élevée chez les femmes, elle ne diffère pas de façon significative de celle des hommes en emploi dans le modèle ajusté.

**DISCUSSION**

De manière générale, les indicateurs de santé mentale apparaissent plus défavorables aux femmes qu’aux hommes, ce qui est conforme aux résultats de nombreuses enquêtes qui montrent que la prévalence de plusieurs problèmes de santé mentale est plus élevée chez les femmes que chez les hommes. Cette différence peut être attribuée au cumul des responsabilités familiales et professionnelles, mais également au fait que les femmes occupent souvent des emplois moins qualifiés ou sous-payés et que certains postes de travail peuvent différer selon le sexe, même pour des emplois ayant le même titre. Par ailleurs, le peu de contraintes psychosociales de travail associées significativement à un épisode dépressif majeur et à l’indice global positif de dépression pourrait s’expliquer par un problème de repérage dans le temps et surtout par la faible prévalence de ces problèmes. En effet, alors que la symptomatologie est mesurée sur les douze derniers mois, l’exposition aux contraintes, elle, est mesurée en se référant à l’emploi actuel. De plus, la faible prévalence de ces deux problèmes de santé nécessite plus de puissance pour obtenir
Épisodes de dépression majeure, et ce, tant chez les hommes que chez les femmes. Le faible soutien social sont associés de façon significative à des résultats significatifs dans les analyses statistiques. D'ailleurs, il importe également de souligner que, dans les modèles multivariés, l'ajustement de certaines caractéristiques professionnelles ou personnelles a pu faussement atténuer la relation entre les contraintes psychosociales de travail et les problèmes de santé mentale (effet de surajustement). Un ajustement pour la présence de problèmes de santé chroniques pourrait créer un tel effet, par exemple, s'il s'avérait que ces problèmes résultent de l'exposition aux contraintes de l'organisation du travail.

De façon surprenante, la faible autonomie de compétence apparaît, chez les femmes, comme un facteur de protection quant à un épisode dépressif majeur. Ce constat a également été fait par Blackmore et autres20, à l'échelle du Canada, pour la dépression sévère. Peut-être s'agit-il d'une conséquence du recours à certaines stratégies par les femmes, telle l'acceptation d'un travail déqualifié, pour être plus en mesure de faire face aux contraintes familiales? Ces résultats pourraient s'expliquer également par l'existence, chez les femmes, de valeurs différentes (ex.: solidarité, entraide), moins compatibles avec l'obligation de compétition liée aux postes de cadre ou à des responsabilités supérieures, de même que par un poids plus important accordé, par exemple, à l'utilité sociale de son travail malgré son caractère répétitif ou monotone.

Enfin, il convient de rappeler certaines limites de l'ESCC. D'abord, en ce qui concerne les instruments de mesure utilisés, il est important de mentionner que le questionnaire comportait un nombre restreint de questions par rapport à celui initialement validé pour la mesure des contraintes de l'organisation du travail. Cette lacune a pu particulièrement influencer la validité de la mesure de la demande psychologique pour laquelle seulement un ajustement pour la présence de problèmes de santé chroniques pourrait créer un tel effet, par exemple, s'il s'avérait que ces problèmes résultent de l'exposition aux contraintes de l'organisation du travail.

De façon surprenante, la faible autonomie de compétence apparaît, chez les femmes, comme un facteur de protection quant à un épisode dépressif majeur. Ce constat a également été fait par Blackmore et autres20, à l'échelle du Canada, pour la dépression sévère.

Tableau 4. Modèles de régression logistique des liens entre l'indice global positif de dépression et les contraintes psychosociales de travail et caractéristiques professionnelles et personnelles, population de 15 à 75 ans en emploi, Québec, 2002

<table>
<thead>
<tr>
<th>Caractéristiques professionnelles</th>
<th>Hommes (n=1 420)</th>
<th>Femmes (n=1 295)</th>
<th>Total (n=2 715)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraintes psychosociales de travail</td>
<td>RC ajusté* (IC 95%)</td>
<td>RC ajusté* (IC 95%)</td>
<td>RC ajusté* (IC 95%)</td>
</tr>
<tr>
<td>Autonomie de compétence (faible)</td>
<td>1,93 (0,89-4,19)</td>
<td>0,64 (0,36-1,12)</td>
<td>1,06 (0,70-1,62)</td>
</tr>
<tr>
<td>Autorité décisionnelle (faible)</td>
<td>2,10 (1,12-3,96)</td>
<td>0,69 (0,38-1,26)</td>
<td>1,11 (0,72-1,79)</td>
</tr>
<tr>
<td>Demande psychologique (forte)</td>
<td>1,00 (0,51-1,96)</td>
<td>1,29 (0,64-2,61)</td>
<td>1,10 (0,68-1,79)</td>
</tr>
<tr>
<td>Soutien social (faible)</td>
<td>1,54 (0,82-2,88)</td>
<td>1,50 (0,89-2,53)</td>
<td>1,52 (1,05-2,22)</td>
</tr>
<tr>
<td>Efforts physiques (intenses)</td>
<td>1,08 (0,61-1,90)</td>
<td>0,72 (0,40-1,31)</td>
<td>0,88 (0,58-1,32)</td>
</tr>
<tr>
<td>Insécurité d’emploi (présence)</td>
<td>1,32 (0,60-2,90)</td>
<td>1,20 (0,62-2,31)</td>
<td>1,27 (0,78-2,05)</td>
</tr>
<tr>
<td>Caractéristiques personnelles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nombre d'heures travaillées</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-34</td>
<td>1,58 (0,09-28,00)</td>
<td>1,01 (0,42-2,44)</td>
<td>1,09 (0,49-2,43)</td>
</tr>
<tr>
<td>35-40</td>
<td>1,47 (0,09-23,06)</td>
<td>1,06 (0,50-2,23)</td>
<td>1,13 (0,56-2,28)</td>
</tr>
<tr>
<td>≥41</td>
<td>2,67 (0,17-42,08)</td>
<td>1,15 (0,49-3,03)</td>
<td>1,51 (0,68-3,31)</td>
</tr>
<tr>
<td>Nombre de semaines en emploi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-26</td>
<td>2,32 (0,79-6,82)</td>
<td>1,71 (0,65-4,48)</td>
<td>1,94 (0,94-4,02)</td>
</tr>
<tr>
<td>27-51</td>
<td>0,93 (0,40-2,16)</td>
<td>0,99 (0,50-1,95)</td>
<td>0,94 (0,56-1,58)</td>
</tr>
<tr>
<td>52</td>
<td>1,00 (...)</td>
<td>1,00 (...)</td>
<td>1,00 (...)</td>
</tr>
<tr>
<td>Travaillé à son compte (non)</td>
<td>1,08 (0,36-2,33)</td>
<td>4,00 (1,20-13,34)</td>
<td>2,15 (1,00-4,61)</td>
</tr>
<tr>
<td>Caractéristiques personnelles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type de ménage (vit seul)</td>
<td>4,01 (2,05-7,84)</td>
<td>1,68 (0,93-3,00)</td>
<td>2,57 (1,69-3,91)</td>
</tr>
<tr>
<td>Problème de santé chronique (oui)</td>
<td>2,21 (1,17-4,16)</td>
<td>3,50 (1,80-6,79)</td>
<td>2,85 (1,84-4,40)</td>
</tr>
<tr>
<td>Plus haut niveau de scolarité</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Études secondaires partielles</td>
<td>1,00 (...)</td>
<td>1,00 (...)</td>
<td>1,00 (...)</td>
</tr>
<tr>
<td>Diplôme d'études secondaires</td>
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<td>0,71 (0,25-1,96)</td>
<td>1,08 (0,58-2,01)</td>
</tr>
<tr>
<td>Études postsecondaires partielles</td>
<td>1,70 (0,46-6,27)</td>
<td>0,40 (0,11-1,52)</td>
<td>0,89 (0,41-1,90)</td>
</tr>
<tr>
<td>Grade/diplôme d’études postsecondaires</td>
<td>1,13 (0,49-2,62)</td>
<td>0,66 (0,28-1,53)</td>
<td>1,00 (0,57-1,76)</td>
</tr>
<tr>
<td>Revenu du ménage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inférieur</td>
<td>1,00 (...)</td>
<td>1,00 (...)</td>
<td>1,00 (...)</td>
</tr>
<tr>
<td>Moyen inférieur</td>
<td>1,08 (0,23-5,02)</td>
<td>0,91 (0,38-2,21)</td>
<td>0,93 (0,48-1,80)</td>
</tr>
<tr>
<td>Moyen supérieur</td>
<td>2,66 (0,66-10,71)</td>
<td>0,86 (0,37-1,96)</td>
<td>1,34 (0,72-2,49)</td>
</tr>
<tr>
<td>Supérieur</td>
<td>2,13 (0,46-9,98)</td>
<td>0,43 (0,15-1,25)</td>
<td>0,85 (0,37-1,95)</td>
</tr>
<tr>
<td>Non déclaré</td>
<td>2,12 (0,18-24,49)</td>
<td>1,42 (0,37-5,46)</td>
<td>1,61 (0,58-4,50)</td>
</tr>
<tr>
<td>Âge</td>
<td>0,99 (0,95-1,02)</td>
<td>0,98 (0,96-1,00)</td>
<td>1,91 (1,19-3,04)</td>
</tr>
<tr>
<td>Sexe (femmes)</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

* Le RC de chacune des variables du modèle est ajusté pour toutes les autres. Lorsque le test global d’une variable (khi-carré ajusté) est significatif au seuil de 0,05, les RC significatifs sont indiqués en gras.

Source : Statistique Canada, Enquête sur la santé dans les collectivités canadiennes, Santé mentale et bien-être, cycle 1,2, fichier de partage – Québec, 2008.
Compilation : Institut de la statistique du Québec.
CONCLUSION

Les résultats des analyses nous ont permis d’atteindre l’objectif fixé au départ, soit de documenter pour le Québec les liens entre certaines dimensions de l’organisation du travail reconnues pathogènes et certains problèmes de santé mentale, en tenant compte des différences entre les hommes et les femmes. Par ailleurs, le contenu de ce genre d’enquête aurait avantage à être bonifié pour couvrir adéquatement l’ensemble des conditions d’emploi ou de travail reconnues pathogènes, telles le manque de reconnaissance, le harcèlement psychologique ou encore certaines situations socialement préoccupantes, comme par exemple les problèmes associés à la conciliation travail-famille. L’Étude québécoise sur les conditions de travail, d’emploi, de santé et de sécurité du travail (EQCOTESST), réalisées au Québec en 2007-2008 visait à combler ces lacunes.

RÉFÉRENCES


ABSTRACT

Objective: The objective of the study was to conduct a gender-based analysis of associations between certain psychosocial work demands and certain mental health problems in Québec.

Methods: The study comprised 2,877 workers, with a response rate of 78%. Data collection was conducted by means of computer-assisted interviews, mainly in person. The mental health problems retained in the model were: psychological distress, a major episode of depression, and a positive score on the global depression index. The psychosocial work demands measured were: level of decision latitude, of psychological job demands and of social support. A set of job and personal characteristics were also measured.

Findings: In all, 41% of Québec workers have a low level of decision authority and 46% experience low skill discretion at work. Moreover, 45% reported having little social support and 40% high psychological job demands. The findings show that 25% of the population studied had experienced a level of psychological distress during the month preceding the survey, and during the previous 12 months, 4% had had a major episode of depression and 6.4% a score on the global depression index indicating depression. These indicators seemed more marked among women compared to men. The findings of the multivariate analysis showed that among women, low skill discretion surprisingly appeared to be a protective factor against a major episode of depression.

Conclusion: The reasons for these differences between the sexes are discussed and seem related to such factors as more unfavourable working conditions for women, as well as double workloads (home and work), and a relationship to work that differs from that of men.

Key words: Job characteristics; stress; mental health; working conditions; women’s health
Health and Safety in Small Workplaces: Refocusing Upstream

Joan M. Eakin, PhD,1 Danièle Champoux, MA,2 Ellen MacEachen, PhD3

ABSTRACT

Small workplaces have particular injury risks and are enduringly difficult for the occupational health and safety (OHS) system to reach. This paper puts forward an "upstream" perspective on OHS in small workplaces that moves beyond the attributes of the workplace and those who work there.

The paper draws on and synthesizes ideas and findings from emerging upstream OHS research, our own empirical investigations in Ontario and Quebec, and our collected research experience in small workplace health.

Upstream structures and processes (regulations, policies, services, interventions, professional practices) are often misaligned with the conditions of work and social relations of small workplaces. Key upstream factors include regulatory exemption, subcontracting, unionization levels, the changing character of small enterprise, joint management, service and inspection constraints, competing institutional accountabilities, institutional orientation to large business, and inappropriate service and policy.

Misalignment of the OHS system with the nature and practical realities of small workplaces can undermine prevention and the management of ill health and injury. To address such misalignments, the paper calls for: 1) restructuring of data collection and consultation processes to increase the visibility, voice and credibility of small workplaces; 2) "audits" of OHS-related legislation, policy and interventions to assess and address implications for small workplaces; 3) reflection on current terms and concepts that render workers invisible and capture poorly the essence and (increasing) diversity of these workplaces; and 4) extension of the upstream gaze to the global level.

Key words: Social sciences; government agencies; government regulation; safety management; small business

There were almost one million "small" businesses (SBs)* in Canada in 2004.1 These enterprises, often defined as those employing fewer than 50 persons, include over 4 million workers, about 39% of the private labour force. Industries dominated by small businesses tend to have higher fatality rates than do industries dominated by larger-sized organizations,2 and they present enduring, unresolved challenges to the occupational health and safety (OHS) system in terms of prevention, disability and return to work.

Internationally, small workplaces are widely considered hard to reach in terms of health and safety regulation and service3,4 and relatively impervious to the regular tools of the trade for assessing risk, providing service and designing interventions. To improve OHS in small firms, research and practice have concentrated on linking the level of risk to attributes of the workplace and those who work there, including the risk profiles of workers (e.g., higher risk groups like immigrants and young people are disproportionately employed in this sector) or the deficits of management (e.g., employers may lack the resources, knowledge, skills, time and motivation to deal effectively with OHS).5 Associated with this definition of the problem are intervention approaches that are educational or motivational in nature (e.g., informing employers of obligations and risks, offering financial incentives for prevention activities) and that are of low cost, simplified and industry specific. Service delivery has been adapted to the small workplace situation, for example, through the introduction of more appropriate measurement tools,6 more understandable and relevant educational materials,7 upgraded management systems8,9 and special modes of consultation, such as those involving safety representatives, worker participation10,11 and intermediaries.12,13

More recently, attention has moved upstream, in the sense of McKinlay’s iconic notion of upstream-downstream thinking:14 searching for cause and locating intervention further from the most immediate local site of the phenomenon. An upstream perspective on small workplace health focuses on broad contextual influences (e.g., economic systems, structure of labour markets15 and organizational/regulatory arrangements such as subcontracting16 and outsourcing17) and on intermediate structures and processes (e.g., the institutions, programs and professional service providers of the OHS system itself). An upstream perspective focuses less on the problematic features of small workplaces than on the conditions that set the terms for and influence such problems.18

The purpose of this paper is to contribute to an upstream perspective on OHS in small workplaces and thereby to advance our understanding of why small workplaces are the way they are and of

* Although there are distinctions between the terms, in this paper we use “small business” and “small workplaces” interchangeably.

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how OHS intervention can be improved. Integrating selected findings from our own three separate research projects and Canadian data, we identify the implications of some key upstream system elements for small workplace OHS. We argue that the assumptions, design and mechanisms of the OHS system – including legislation, policy, labour/market structures, institutional and intervention processes – impede the recognition and documentation of occupational risk in small workplaces and undermine efforts to improve health and safety within them.

Key upstream issues of consequence for OHS in small businesses

MacEachen et al.19 conducted a mixed-method systematic review of the international (multi-language) literature on OHS in workplaces with 100 or fewer employees. A review of qualitative studies20 focused on processes related to OHS in SBs, and several papers in the review considered the link between OHS conditions and the broader, upstream circumstances in which SBs operate. Drawing on this literature, across different jurisdictions we identify four issues in particular that have implications for OHS in SBs and show how policy and practice can fail to accommodate small workplace realities, with particular illustrations from Quebec and Ontario.

Exemption

A common approach to addressing OHS in SB is through exempting them from general legal and policy provisions.4,12 For instance, in Ontario and Quebec businesses employing fewer than 20 workers, unlike larger businesses, are not generally obliged to have safety committees or to re-employ injured workers.21 However, such exemptions and the relative freedom from safety inspection can reduce the pressure on SBs to be aware of and address OHS risks, and to know about and comply with safety regulations,17,22 leading to lack of OHS knowledge and compliance.23-25 Exemption from regulations, coupled with the rarity of health and safety inspections in small workplaces, may increase worker exposure to hazards by making small firms an attractive “reduced regulation” destination for outsourced dangerous work (e.g., asbestos removal).16 Even where regulations do apply to SB, the distinct social and organizational arrangement of work in SBs can foster improvised implementation practices that do not support the intent of the regulations.24,26,27 The literature suggests that SBs require tailored regulations rather than exemption.

Subcontracting

Subcontracting is a regular feature of SBs, especially those doing specialized jobs for larger firms. In some SB sectors, such as construction, small companies are contracted to do work for larger firms, and they in turn further subcontract out parts of this work. Such vertical and horizontal subcontracting arrangements have implications for work-related health and safety. For example, by fragmenting tasks and authority, subcontracting can create complex conditions of legal responsibility that can confuse the different employer parties, confound OHS accountability and render ambiguous the workers’ employment status.16 In the construction and forestry industries this situation is compounded by the practice of workers owning their own tools, which can lead workers to assume that they have the health-related role and responsibilities of an owner-operator.28

Low Levels of Unionization

Unions play a significant role in the development of workplace OHS systems: they support their members, engage in health and safety education and training, represent labour in multipartite deliberations, advocate for system change and so on. Typically, however, the level of unionization in SBs is low, with a corresponding likelihood of irregular norms and standards, and greater imbalance of power between labour and management. The absence of unions in whole sectors dominated by SBs (e.g., farming, construction, dry cleaning) may explain in part their low levels of health and safety knowledge and training,16,23,29 and the prevalence in SBs of “improved” health and safety measures (e.g., re-using safety gloves or opening a window instead of wearing a mask).22,23,26

Beyond Neighbourhood Shops

The literature suggests that SBs can no longer be conceptualized simply as economically fragile “neighborhood shops” operations. With improved telecommunications and a globalized economy, so-called SBs now include high technology firms with international reach. Those firms may have some features in common with conventional notions of SB, but they are not necessarily financially precarious or local. One study of small biotechnology firms showed that they have traits more typical of large firms: they are run by highly educated professionals trained in safe laboratory practices, and they have funds to outsource their own hazardous work (e.g., disposal of biohazards) and to hire lawyers and consultants to advise on OHS compliance.30 The diversity and changing nature of SBs constitute an important upstream dimension of the OHS problem in small workplaces.

Upstream implications for SB of OHS legislation, policy and intervention

Further upstream concerns emerge from Champoux and Brun’s ongoing research in Quebec on the implications for SB of regulatory, policy and service structures and practices.31 The study is based on semi-directed interviews with policy makers, system managers, worksite inspectors for the CSST (Quebec’s occupational health and safety and compensation authority*), employers’ and workers’ representatives, injured workers’ associations and occupational health professionals.

Conceptions of Small Business

Champoux and Brun report that SBs are portrayed within the OHS field as being largely incapable of taking charge of OHS.9 Further, they are seen as a less promising target for intervention compared with large businesses, which have a higher absolute prevalence of accidents and greater share of the labour force.12,32 In Quebec, actuaries estimate that there is one accident every eight years in SBs, even though OHS statistics are not collected or analyzed by business size. This estimate, combined with the absence of data related to size, obscures health and safety issues in SBs. Invisibility, along with cliché conceptions of the capabilities of SBs, may help account for why SB might be of lesser priority within the OHS system and uninvolved in the law and policy-making process.34,35

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* Quebec’s Commission de la santé et de la sécurité du travail oversees the application of the province’s OHS legislation and administers the OHS regime, including financing, inspection and compensation. Inspection for occupational safety is the responsibility of the CSST, and inspection for occupational health is supervised by the Ministry of Health, within the public health system.
Bipartisanship

The notion of joint or bipartite management of OHS embedded in Quebec’s legislation can be a disadvantage for small workplaces. For example, legislation assumes that workers will participate in local OHS committees and thereby put pressure on employers to comply. Although such an assumption is reasonable for large, unionized workplaces, it seldom applies to small workplaces.4,36,37 Even where SBs have been obliged to set up such committees (e.g., imposed by inspectors in the aftermath of an accident), they have been found to be generally ineffective or short-lived because of time constraints and inadequate independent sources of information and support for workers.38,39

The belated 2005 inclusion of SB in the CSST’s Board of Directors should facilitate consideration of SB employers’ concerns. However, with minimal unionization, the 35% of the labour force employed in the SB sector still has no participation in the decision-making process and lacks access to the training funds distributed through unions and to the union legal services needed in increasingly frequent compensation claims disputes.

Intervention Constraints

The study identifies a number of upstream constraints on OHS interventions. For example, public health OHS professionals report waiting up to one year before first visiting newly registered SBs, in part because of their assessment of the low survival rate of SBs. Further, although originally done annually, follow-up worksite evaluations can now be up to seven years apart because of the rising workload of professionals. Additionally troubling are indications that bipartite sector-specific occupational health and safety associations (Associations sectorielles paritaires) refuse to collaborate directly with CSST inspectors for fear of seeing their coaching and technical role jeopardized by association with the enforcement body.

One promising intervention program consisted of an unusual collaboration between CSST inspectors and public health occupational health teams targeting workplaces with particular risks (e.g., electrostatic paint, silica dust). Since the strategy was to visit and coach to compliance all workplaces with the targeted risks, small workplaces were automatically included, and requirements were uniformly applied regardless of enterprise size. Informants in the study observed that this approach seemed fairer to SBs and was better attuned to their capacities because it involved a visit, a focused intervention and effective collaboration of different agencies. Service providers stress that sustainable prevention in SB requires much greater investment of time and technical and management support, and a larger share of the intervention effort than is the case in larger businesses. Strained resources and conflicting rationalities among agencies are important structural impediments to the promotion of OHS in small workplaces.

Upstream implications for SB of prevention and compensation service provision

Upstream issues and misalignments associated with service institutions and service provision were also identified in Eakin et al.’s study of front-line service work to SB clients in Ontario’s Workplace Safety and Insurance Board (WSIB).40 This project emerged from prior research on the impact on return to work outcomes of strained relations between the WSIB and SB clients and of the stigmatization of injured workers by a “discourse of abuse,” i.e., the imputation that compensation claimants are misusing the system.27,41 Using qualitative interviews, observation of everyday work practices and document analysis, the study examined the work logic, interactions and practices of adjudicators, nurse case managers and customer service representatives servicing SB clients.

Competing Institutional Accountabilities

Compensation and prevention work at the front lines operates as a “professional assembly line” (highly standardized work flow combined with need for professional judgement) and is heavily framed by the core roles of the WSIB as an institution: controlling costs, being administratively efficient, addressing the contradictory interests of employers and workers, acting as gatekeeper to resources and managing involuntary clients. These complex institutional accountabilities can be contradictory, creating service challenges that are played out and mediated by front-line staff. Eakin et al.40 found that the positioning of the front-line staff at the nexus of conflicting institutional goals set the stage for how service was provided to small workplace clients. Strategic practices helped service providers to handle conflicting job responsibilities, both discursive (the management of work and clients through the way they are conceived, named and framed) and discretionary (the strategic management of work problems and process blockages through informal arrangements and social interactions).

Institutional Orientation to Large Business

Overlaying and accentuating the core character of front-line work were many of the distinctive issues associated with servicing SBs identified earlier in this paper. First, the underlying assumptions, operating principles and policies of the WSIB are designed primarily with large enterprises in mind (e.g., the presumption that the workforce is unionized or that there are health and safety management systems in place). Acknowledged differences between small and large workplaces are addressed mostly through exemption from regulations and special premium arrangements. However, SBs face the same standard policies and procedures as do large firms (such as strategies of “self-reliance” and “early” return to work), which assume that SBs have expertise, resources, circumstances and labour relations that they may not actually have.27

Because front-line service rationality is heavily centred on cost and the perception that the system is paid for by employer premiums, SBs tend to be seen, compared with larger businesses, as generating less income relative to the cost of servicing and as costlier to service per worker. Further, small workplaces have a fluctuating presence/absence on the WSIB’s institutional radar screen. For example, a special unit for servicing SBs was instituted during one operational re-organization and disbanded during the next. Frequent re-positioning of SB in the WSIB and the absence of a dedicated unit can signal institutional ambivalence about the priority of SB, demand constant re-configuration of work practices at the front lines, reduce the institutional visibility of SB issues and impede the accumulation of collective knowledge and skills particular to servicing this sector.

Inappropriate Policy and Service

Service providers found that certain policies were difficult to apply in small enterprises (e.g., accommodation of injured workers
through modified jobs) or produced complicating perverse consequences (e.g., workplace self-regulated return-to-work schemes can involve SB employers inappropriately in the medical affairs of their injured workers\).

Existing guidelines for judging compensation claims often did not contemplate the situation of SBs, leaving adjudicators to engage in improvised discretionary practices that could work for or against their own and the broader institution’s interests. Idiosyncratic individualized arrangements, for example, can speed work for or against their own and the broader institution’s interests. Deducators to engage in improvised discretionary practices that could

- undermine the front-line staff’s ability to do their jobs and, more critically, the WSIB’s efforts to maintain institutional political neutrality.

CONCLUSION

Drawing on existing upstream OHS research, our own empirical Canadian investigations and our collective research experience in small workplace health, the paper proposes the following:

- The “problem” of OHS in small workplaces does not just reside downstream in the attributes of the workplace or those who work there, but also upstream in the broader systems in which the workplaces are located.
- “Upstream” refers to broad contextual conditions influencing health and safety (changing labour market, economy, nature of work) and to the structure and functioning of the occupational health system (organization, philosophy, strategies, practices).
- Legislation, policy, organizational processes, interventions and service practices are, in many respects, misaligned with the character and context of small workplaces and their health and safety problems.
- Misalignments are located in formal, official sites (regulatory texts, procedural guidelines) and reproduced in the informal nooks and crannies of organizational process and service practices.
- Misalignments are both conceptual and ideological (assumptions, discursive constructions of the problem and players, dominant preoccupations and principles) and material (practical difficulties of fitting round pegs into square holes).

What are the implications of these conclusions for the promotion of health in small workplaces? How does one go about addressing upstream misalignments? We need to ensure that OHS legislation and policy take SB into account\ and re-direct resources towards this sector. To achieve this we need to bring the problems of small workplace health into view, and generate the political commitment and financial motivation for them to be addressed. This is much more easily said than done. Where to begin?

We might start by developing an information system that gathers and analyzes OHS data by size of workplace (the significant role of data and indicators in the OHS field is discussed by Balka and Freilich\). This might help us develop a more compelling case – in health and in monetary terms – for addressing SB. Then, we could re-structure our policy and regulatory consultation processes to ensure that small workplaces are involved and that their voices are heard, respected and better positioned in what Becker has called the “hierarchy of credibility”\.

The consultation process could be buttressed by an SB audit requirement (much like an environmental impact review) that pre-

scribes explicit assessment of the relevance of regulatory and policy interventions for small workplaces. Such an audit might even try to extend beyond the immediate impact and anticipate the new problems that so often lurk in the solutions. For instance, regulatory exemptions that have excluded small workplaces from system-level control have also deprived workers of the ability to exercise their rights in the system, and the formation of safety “mutuals” for Quebec SBs fostered more claims management than prevention and negatively affected employment relations and return to work.

Since the paper has flagged the conceptual dimension of upstream thinking, we might also reflect on a primary issue: the very idea of small business. How is this phenomenon conceived, what assumptions are we making, and how does the notion shape the way we define and address OHS problems? Are conceptions of SBs as “mom and pop operations” with insufficient managerial, motivational and economic resources accurate and realistic, or out of date and patronizing? Where are the workers in the notion of small business, a term that implicitly refers to the organization and employers, and assumes that interests of employers and workers are the same? Indeed, how useful is the concept of small business, given this weighting in favour of the employer/corporate dimension, the increasing diversity of organizational forms and social characteristics encompassed by it, and the observation that employers may not even think of themselves in such terms\.

In re-thinking our concepts and re-framing the structural context for promoting health in small workplaces, we might extend our upstream gaze to the global context. Emerging changes in trade, financial and labour markets, and in political and social systems have immense implications for the growing proportion of small workplaces around the world and for the OHS systems that strive to reduce occupational harm. Further, at a time of great economic upheaval and change in the public regard of large corporate enterprises, we might even find novel opportunities for creative advance of the upstream agenda for small workplace health and safety.

REFERENCES

RÉSUMÉ

Les risques à la santé et à la sécurité sont particuliers dans les établissements de petite taille, et les systèmes de sécurité et de santé au travail (SST) ont toujours du mal à joindre ces établissements. Dans cet article, nous présentons la SST dans les petits établissements selon une perspective « en amont » qui va au-delà des attributs de l’établissement et des personnes qui y travaillent.

Notre article est basé sur la synthèse d’idées et de résultats provenant de nouvelles études sur la SST adoptant une perspective « en amont », de nos propres recherches empiriques en Ontario et au Québec, et du cumul de notre expérience de recherche sur la santé dans les établissements de petite taille.

Les structures et les processus « en amont » (règlements, politiques, services, interventions, pratiques professionnelles) sont souvent décalés par rapport aux conditions de travail et aux relations sociales dans les petits établissements. Les facteurs clés ciblés par cette perspective incluent les exemptions réglementaires, la sous-traitance, les niveaux de syndicalisation, l’évolution de la petite entreprise, la codirection, les contraintes aux services et aux inspections, les objectifs institutionnels concurrents, l’orientation institutionnelle vers les grandes entreprises, et les services et les politiques inadaptés.

Le décalage du système de SST par rapport à la nature et aux réalités pratiques des établissements de petite taille peut nuire à la prévention et à la prise en charge des problèmes de santé et des blessures. Pour aborder ces décalages, notre article réclame : 1) une restructuration des processus de collecte de données et de consultation afin d’accroître la visibilité, la prise en compte et la crédibilité des petits établissements; 2) une évaluation de la capacité des lois, des politiques et des interventions de SST à prendre en compte les petits établissements; 3) une réflexion sur la terminologie et les concepts actuels qui rendent les travailleurs invisibles et qui ne reflètent pas adéquatement la nature et la diversité (croissante) de ces lieux de travail; et 4) une application très large de cette perspective « en amont » aux études en SST.

Mots clés : sciences sociales; agences gouvernementales; réglementation gouvernementale; gestion de la sécurité; petites entreprises

Lynda S. Robson, PhD,1 Philip L. Bigelow, PhD1,2

ABSTRACT

Objective: The measurement properties of Occupational Health and Safety (OHS) management audits might be important in some applications, especially when audit scores are treated as performance measures. The review, therefore, sought to identify and summarize the research evidence on the measurement properties (e.g., reliability, validity) of methods of OHS management audit.

Methods: Bibliographic databases in business, medicine and OHS were systematically searched. Evidence from relevant publications was synthesized using traditional narrative review methods.

Synthesis: The literature on the measurement properties of OHS management audit methods is sparse. Seventeen relevant audit methods were identified. Content validity was demonstrated for only five audit methods. Inter-rater reliability was formally tested for only three audit methods and construct validity for only one. There were no studies of test-retest reliability or responsiveness. The investigations of inter-rater reliability (i.e., consistency among auditors) showed that it is often unacceptably low.

Conclusion: There is a research gap concerning the measurement properties of OHS management audit methods. The available research raises questions about the properties of audit methods in current use.

Key words: Accident prevention; management audit; occupational health; reproducibility of results; safety management; validation studies

La traduction du résumé se trouve à la fin de l’article.


An occupational health and safety (OHS) management system is designed to protect the health of workers by the following means: designating roles and responsibilities related to OHS; setting organizational targets and objectives related to OHS; planning and establishing the maintenance of hazard controls; and monitoring, reviewing and improving the system’s implementation and effectiveness. Federal and provincial legislation (e.g., the Occupational Health and Safety Act in Ontario) specifies simple management systems applicable to all workplaces. Exemplary organizations also seek compliance with voluntary standards and guidelines1-3 that are more comprehensive.

Auditing is a means of directly and comprehensively monitoring the implementation and effectiveness of a firm’s OHS management system.4 The auditing process typically involves the following:5 gathering evidence about the management system through interviews, documentation reviews and work site observations, guided by an audit instrument; evaluating the gathered evidence; and providing a summary of the evaluative findings. Auditing is an important component of an OHS management system,1-3 and up to 95% of Fortune 2000 companies perform audits.5 While less prevalent in smaller firms, audits are recognized as nevertheless relevant.7

Depending on the type of application in which a particular OHS management audit is involved, researchers and practitioners might want to consider its measurement properties (i.e., reliability, validity, etc.). In some cases, measurement properties are relatively less important. For example, simple audits are sometimes used to assess the management and programmatic needs of organizations that are just starting to develop their OHS management systems.8 Similarly, there are firms in which management systems are more developed but in which audits are used periodically only to ensure that there are no major gaps in the management system. In these two situations, only a blunt measurement instrument is needed, though one would want some assurance of its content validity: one would want to be confident that the key elements of an OHS management system, appropriate for the organization, are adequately represented in the content of the audit instrument, otherwise it cannot serve its function of identifying gaps. In contrast to the previous examples, additional measurement properties (e.g., inter-auditor reliability, predictive validity, responsiveness) might also be quite important when audits are used in performance measurement applications. These include benchmarking, determining whether a particular standard has been met or monitoring progress over time. Measurement properties may be additionally important in such applications when the results of audits determine organi-
zational rewards, e.g., financial,9-12 recognition,13 contract opportunities10,12 or even penalties.14 To the extent that the data provided by the audit of a firm are not reliable, valid or responsive, organizational actions based on the audit report might be misdirected.

Our original intent was to review the research evidence on the measurement properties of OHS management audits using the methods of systematic literature reviews. However, initial screening revealed a lack of published studies, and we therefore only used systematic review methods for searching and screening the literature, and then used traditional review methods to assess and synthesize the evidence.

METHODS

Literature search
The search strategy was developed in MEDLINE, starting with the Medical Subject Heading (MeSH) terms assigned to known, relevant articles. This search strategy was applied to five other bibliographic databases, adaptations being made as required: American Business Inform (ABI), CCInfoWeb, Econlit, EMBASE and Health and Safety Science Abstracts. ABI and CCInfoWeb catalogue grey literature sources, as well as those that are peer-reviewed. The databases were searched from their point of inception until September 2008. One search strategy looked for abstracts classified with the MeSH term “Management Audit” AND one of the following terms: “Wounds and Injuries”, “Accidents, Occupational”, “Accident Prevention” or “Occupational Health”. The second, more fruitful, strategy looked for abstracts classified with the MeSH term “Safety Management” AND the free text term “Audit.” No restrictions were placed regarding date and language of the original publication. In order to broaden the search, the following sources were also used: reference sections of publications deemed relevant, personal files of the authors, and an in-house bibliographic database assembled for a systematic review of OHS management system effectiveness.16

Relevance screening
The titles and abstracts arising from the searches were reviewed to identify potentially relevant publications using two inclusion criteria: • The publication is a journal article, book, conference proceeding, dissertation or report, • The publication contains information on any of the following measurement properties of OHS management audits: content validity, construct validity, inter-rater reliability, test-retest reliability or responsiveness.

Nine references17-25 were eliminated when the following exclusions were applied: • Publication is a magazine article or newsletter • Audit focuses on hazards rather than on management17,18 • Audit focuses on the management of a particular type of OHS hazard instead of all OHS hazards19 • Audit is a safety management system audit, which does not focus on OHS20-25

The last exclusion pertains to a distinct stream of research and practice focused on the prevention of out-of-control processes or catastrophic events. Some of this literature was reviewed in an earlier report,26 and the basic conclusion drawn from it is similar to the one we draw for this review.

The review of the titles and abstracts was shared by the authors, each title and abstract being reviewed by a single author. Potentially relevant publications were retrieved and reviewed in more detail.

Evidence extraction and synthesis
Both authors were involved in the data extraction and evidence synthesis. Each author read all retrieved publications, discussed and developed a common understanding of the findings, and agreed upon which publications did not meet the criteria; they shared the extraction and synthesis of the evidence.

RESULTS

Table 1 summarizes the features of 17 distinct audit methods found in the relevant publications. Several well-known audit methods were identified through the review: the Diekemper and Spartz method,27-29 the International Safety Rating System (ISRS)30-35 and the CHASE audits.33,36 Another two were associated with the American Industrial Hygiene Association.37,38,41-45 Several of the audits were intended for multiple sectors of the economy, whereas others target a single sector. The number of items in each audit instrument is in the range of less than 100 to several hundred. Some methods require the auditor to respond to an item by indicating yes or no; other methods allow a greater variety of responses. Less commonly, auditors are asked to assign a number of points out of a maximum possible number. The most common way of summarizing the overall audit results is a percent score (out of 100).

For eight of the methods listed in Table 1, either we considered the content validity to have been evidenced, or a formal test of reliability or validity had been reported. This evidence is summarized in Table 2 and is discussed further below. For the remaining nine audit methods, only information of a more preliminary nature was available, and they are not discussed further.

Content validity
In the present context, content validity36 refers to the comprehensiveness of the audit instrument in its representation of management system concepts. There are five methods for which content validity is demonstrated. The first17,18 had ISO 9001 as the organizing framework and drew its content from several OHS and environmental management system documents. A second method,41-45 also developed at the University of Michigan, defined a “universe” of OHS management system elements. Researchers reviewed 13 OHS and environmental standards or guidance documents and selected four that collectively represented the content of all 13. These four “input models” were deconstructed and then reorganized into an integrative model. A third method was developed in collaboration with the Canadian Pulp and Paper Association46 using a matrix approach to the audit content: 11 OHS activity areas (e.g., emergency responsiveness preparation, health surveillance) were each considered in relation to the presence of key management system components (goals and procedures, assignment of responsibility, performance measurement, review of performance, corrective action). A fourth method, developed in Norway for the mining sector,39,40 was intended for consensus-based, high-level, self-audits by organizational representatives. The final example comes from a Singapore project in the construction sector,48 in which the steps involved included reviewing existing methods, generating items,
Table 1. Audit Methods Included in the Review*

<table>
<thead>
<tr>
<th>Name of Audit Method*</th>
<th>Target Population</th>
<th>Conceptual Basis</th>
<th>Number of Items</th>
<th>Nature of Response Options</th>
<th>Form of Final Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diekemper &amp; Spartz method27-29</td>
<td>Manufacturing</td>
<td>Unknown</td>
<td>29</td>
<td>1 to 4 (poor to excellent)</td>
<td>Percent (of total possible points)</td>
</tr>
<tr>
<td>International Safety Rating System (ISRS) – Mining30-32</td>
<td>Mining operations in South Africa</td>
<td>Unknown</td>
<td>From about 100 to 627, depending on the star level attempted35</td>
<td>Mainly yes/no; some 0-20 scales</td>
<td>See ISRS – Mining</td>
</tr>
<tr>
<td>ISRS – Generic, 4th ed.32-35</td>
<td>General industry, with first version developed in the steel industry (Esiner &amp; Leger30)</td>
<td>Unknown</td>
<td>135 clauses (determined by review authors based on Dyjack37)</td>
<td>In conformance, minor non-conformance, major non-conformance</td>
<td>Qualitative: Non-conformance reports that identify deviation from standard and its root cause</td>
</tr>
<tr>
<td>CHASE series33,36</td>
<td>CHASE-I and -II: general industry (&lt;100 and 100+ employees)</td>
<td>Based on review of regulations (UK) and other sources, professional judgment and input from pilot testing. Construction-CHASE: all sizes</td>
<td>486</td>
<td>Ordinal score for each measurement criterion (0-5) in most recent version40</td>
<td>Average score (0-5)</td>
</tr>
<tr>
<td>Safety Element Method39,40</td>
<td>Norwegian mining</td>
<td>Principles of safety management and quality assurance. Action research process used to develop content, with experts referring to ISRS and other existing tools.</td>
<td>456 (less for firms with &lt;10 employees)</td>
<td>Yes/no and assigning points out of 20 or 30.</td>
<td>Percent (of total possible points)</td>
</tr>
<tr>
<td>AIHA Universal OHSMS Assessment Instrument41-45</td>
<td>All sectors</td>
<td>Reconstructed from four input models, using system theory and policy analysis models for organizing framework.</td>
<td>456</td>
<td>Yes/no and assigning points out of 20 or 30.</td>
<td>Percent (of total possible points)</td>
</tr>
<tr>
<td>Safety Management Audit for Construction (SMA-CON)46</td>
<td>Construction in Hong Kong</td>
<td>Based on British Standard 8800:1996 and elements specified by Labour Department.</td>
<td>55</td>
<td>Score 0 or 1</td>
<td>Scores summed by activity or by management system component</td>
</tr>
<tr>
<td>Canadian Pulp and Paper Association47</td>
<td>Canadian pulp and paper</td>
<td>General OHS practices/principles and management system principles. 11 OHS activities assessed with respect to 5 management system elements.</td>
<td>56</td>
<td>Scores from 1 (low) to 4 (high)</td>
<td>Percent (of total possible points) overall and by section</td>
</tr>
<tr>
<td>Water utilities benchmarking audit48</td>
<td>All sectors</td>
<td>Principles from British Standards Institute and the Health and Safety Executive</td>
<td>55</td>
<td>Scores from 0 (not acceptable) to 3 (no weakness; strong improvement process in place)</td>
<td>Percent (of total possible points) overall and by section</td>
</tr>
<tr>
<td>Method for Industrial Safety and Health Activity Assessment (MISHA)49</td>
<td>Manufacturing</td>
<td>Framework based on Booth and Lee’s49 key elements of safety management</td>
<td>80</td>
<td>Yes=1; no=0; partial=0.5</td>
<td>Percent (of total possible points) overall and by section</td>
</tr>
<tr>
<td>AS/NZS 4804-based45,51</td>
<td>Small and medium enterprises in metal prefabrication</td>
<td>Based on Australian/New Zealand standard, AS/NZS 4804</td>
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Table 1. Summary of Research Evidence on the Measurement Properties of OHS Management Methods

<table>
<thead>
<tr>
<th>Audit Method</th>
<th>Content Validity*</th>
<th>Inter-auditor Reliability †</th>
<th>Construct Validity‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>D&amp;S method</td>
<td>Test 1: – Test 2: ±</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>ISRS – Mining</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>AIHA ISO 9001 harmonized</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Safety Element Method</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>AIHA Universal OHSM</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Assessment Instrument</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Canadian Pulp and Paper Association</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>MISHA</td>
<td>Original: – Revised: +</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Construction Safety Index</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

* Classification of the evidence on content validity: +, content validity is considered adequate by the review authors because the method of developing the content for the audit instrument is well described and has involved appropriate stakeholders; –, a formal test of content validity in the research literature concludes that the audit method is not valid. Cell is left blank when the available information is not sufficient for reviewers to assign either + or –.
† Classification of the evidence on inter-rater reliability: +, test(s) of inter-rater reliability yield a Kappa statistic that is 0.41 or more (categorical data) or an intraclass coefficient that is 0.75 or more (continuous data); –, test(s) of inter-rater reliability yield a Kappa statistic that is less than 0.41 or an intraclass coefficient that is less than 0.75. Cell is left blank when no test has been conducted.
‡ Classification of the evidence on construct validity: +, the majority of hypotheses constructed about the expected relations between audit data and other OHS measure(s) in a test of construct validity are supported; –, the majority of hypotheses constructed about the expected relations between audit data and other OHS measure(s) in a test of construct validity are not supported. Cell is left blank when no tests of construct validity have been conducted.

Inter-rater reliability

Inter-rater reliability is the consistency of assessments of the same workplace(s) by different auditors. For categorical data, agreement is best expressed using kappa or weighted kappa (κW), which should minimally be 0.41.58,59 For continuous data, intra-class coefficient statistics are used, with values of 0.75 considered minimal.56 Inter-rater reliability was investigated for three audit methods as part of thesis dissertations.

Kuusisto28 studied the reliability of a version of the Diekemper and Spарт method.27 He found poor reliability when his own ratings were compared with those of local company evaluators (κW of -0.03 to 0.46). Agreement between raters was better when Kuusisto’s ratings were compared with those of his safety specialist students (κW of 0.36 to 0.83). Kuusisto28 also examined the reliability of his own Method for Industrial Safety and Health Activity Assessment by comparing his ratings with those made by members of the company being audited. Weighted kappas were all less than 0.41, so the tool was revised. A test of the new version, which had modified guidance for decision making, showed improvement (κW of 0.38 to 0.58).

Dyjack et al.41 looked at the reliability of a portion of the Michigan Universal Assessment Instrument. The agreement between raters was considered inadequate by several statistical criteria, in spite of the expert qualifications of the two auditors in the project, the similarity of their substantial preparation to use the audit and the content validity of the instrument.

Construct validity

The construct validity of an audit method is established by making hypotheses about the expected relations between audit scores and other measures of OHS, testing the relations using appropriate methods and then confirming the majority of the expectations.56,57 There is only one study of construct validity in the literature on OHS audits that uses statistical analyses. Eisner and Leger30 examined the correlation of the number of stars awarded by the ISRS audit with each of the fatality rate and reportable injury rate. Correlations were small, not all in the
expected direction, and none were statistically significant. However, the study had significant methodological limitations.

Other measurement properties
There were no formal investigations found of test-retest reliability (consistency of results upon repeat administration of the audit) or responsiveness (ability to accurately detect change over time).36,57

DISCUSSION
Principal findings
The research literature on the measurement properties of OHS management audits is sparse. There has been some investigation of inter-rater reliability, which showed that it was often unacceptably low according to usual standards.

Strengths and limitations of the review
This is the first literature review about the measurement properties of OHS management audits. An extensive, systematic search of the literature was conducted. We are confident that our portrayal of the research literature as sparse in this area is valid. We note, however, that there may be relevant information, particularly on proprietary methods, in sources outside of the research literature. Although this additional information would expand upon what is known from the research literature, it is not feasible to collect it in a systematic way.

Review findings in relation to other research
There are no other reviews of this nature in the research literature, preventing comparison with a similar study. However, others have commented on the paucity of available research. In 1988, Eisner and Leger30,p.143 remarked that, “A thorough search ... failed to discover any publication evaluating the [ISRS] scheme” by academic authorities, even though the audit method was internationally recognized at the time. One decade later, Dyjack17,p.80 said he was “unable to identify published studies evaluating the accuracy and repeatability of either publicly or privately held occupational health and safety assessment instruments.”

There is an additional study of inter-auditor reliability known to the authors but not included in the review because it has only been reported as a conference abstract.6 It found acceptable levels of agreement between two qualified auditors for only one of three organizational units audited.

Practical implications of review findings
On the basis of our findings, we expect that some audit instruments in common use have low inter-rater reliability. This could be a concern when various auditors conduct audits within an auditing program and the audit scores are used as a performance measure. Low inter-rater reliability under these circumstances might lead, for example, to inconsistent classification of whether firms meet the performance benchmark, erroneous ranking of firms in intra- and inter-firm comparisons, and erroneous trend information. Our findings indicate a lack of information on the construct validity and responsiveness of audit scores. Researchers, therefore, still need to establish the extent to which decision makers should rely on audit scores as an indicator of firm OHS performance. Our recent study of audit methods5 indicates that practitioners use them for performance measurement purposes, even in the absence of formal knowledge about their measurement properties. We encourage a practitioner who relies on an audit method for such purposes to seek more information about its measurement properties and in the absence of that information be cautious in their decisions based on audit results.

Future research
This review points to a large research gap regarding the measurement properties of OHS management audits. There is also little empirical information on the extent to which various factors affect these properties, since there are only single case reports58,61 and prescriptive information from experts.62-67 According to these and the research literature on financial audits,66-77 we would expect determining factors to fall into the following categories: 1) auditors (e.g., their independence, their expertise), 2) auditing programs (e.g., training processes, quality control processes) and 3) the auditing method (e.g., content, usability of the audit instrument, number of response categories in the audit instrument, explicitness of decision aids for auditors). Further, it would be interesting to know, through an intervention study in the field, the degree to which measurement properties can be improved. On the other hand, the degree to which such change would affect decision making and at what cost also remains to be determined.

There are many practical challenges involved in research on management audits: they are labour intensive for the auditing organization and the workplace, the methods involved in studying audits (e.g., presence of a researcher or a second auditor) could have an impact on the audit results that is difficult to measure, sample size may be constrained by the volume of an audit program, and other data sources available for construct validity studies (e.g., injury reports) may be of poor quality. However, the studies involved in this review provide some examples of what is possible. OHS researchers could also look to the clinimetrics field for further guidance and in illustrations of high-quality measurement research.36,57,59,78-80

REFERENCES


RÉSUMÉ

Objectif : Les propriétés de mesure des audits de gestion en santé et sécurité du travail (SST) pourraient être importantes pour certaines applications, surtout lorsque les scores d’audit sont considérées comme des mesures de rendement. Nous avons donc voulu répertorier et résumer les résultats de recherche sur les propriétés de mesure (p. ex., fiabilité, validité) des méthodes utilisées pour les audits de gestion en SST.

Méthode : Les bases de données bibliographiques des domaines des affaires, de la médecine et de la SST ont été systématiquement interrogées. Les données probantes de publications pertinentes ont été résumées à l’aide de méthodes classiques de recension narrative des écrits.

Synthèse : Les travaux publiés sur les propriétés de mesure des méthodes utilisées pour les audits de gestion en SST sont rares. Dix-sept méthodes d’audit pertinentes ont été recensées. Nous n’avons pu démontrer la validité de contenu que pour cinq de ces méthodes. La fiabilité inter-évaluateurs n’a été véritablement testée que pour trois méthodes d’audit, et la validité de construit, pour une seule méthode. Il n’y avait aucune étude de fiabilité de test-retest, ni de sensibilité. Les études de fiabilité inter-évaluateurs (cohérence d’un évaluateur à l’autre) ont montré que cette fiabilité est souvent trop faible pour être acceptable.

Conclusion : Il y a des lacunes dans la recherche sur les propriétés de mesure des méthodes de gestion en SST. Les travaux publiés soulèvent des questions quant aux propriétés des méthodes d’audit utilisées actuellement.

Mots clés : prévention des accidents; audit de gestion; santé au travail; reproductibilité des résultats; gestion de la sécurité; études de validation
Vaccination of Health Care Workers for Influenza: Promote Safety Culture, Not Coercion

Annalee Yassi, MD, MSc, FRCPC,1 Karen Lockhart, MA,2 Jane A. Buxton, MBBS, MHSc, FRCPC,1 Isobel McDonald, RN, COHN (C), RMT, BScN, BA3

ABSTRACT

Objectives: In British Columbia (BC), Canada, all health care facilities must have a written staff policy on influenza immunization that includes notice that non-immunized staff can be excluded from work without pay during an influenza outbreak in the facility. In light of this policy, our objectives were to explore the views of BC health care workers (HCWs) regarding how best to promote vaccine uptake.

Methods: Long-term care, and acute and community health sites in three of six health regions were divided into thirds, according to their previous season's vaccine uptake rates, and the upper and lower thirds targeted. Ten focus groups were held. NVivo software (QSR International) and a separate editing style were used for analysis.

Results: Four dominant themes emerged: knowledge, communication, perceived punitive nature of workplace policy, and safety climate. HCWs across all focus groups noted that influenza campaign communications should include reinforcement of basic infection control, workplace health and healthy lifestyle choices that affect overall health. HCWs indicated that they wanted a workplace policy that is easy to understand, respectful of individual choice and not punitive.

Conclusions: Our findings highlight the importance of comprehensive approaches, a message that has not appeared as strongly in previous literature. Focus group participants pointed out the importance of health and safety at work generally and felt that creating a healthy workplace culture is necessary to promoting vaccine uptake. Future vaccine promotion initiatives should be integrated into facility-wide workplace health campaigns and care taken to ensure that vaccination campaigns do not appear coercive to HCWs.

Key words: Influenza vaccination; health care workers; health and safety culture

It is widely acknowledged that vaccination of health care workers (HCWs) is an important tool in protecting both patients and HCWs themselves.1-3 Since January 1, 2007, the Joint Commission on Accreditation of Healthcare Organizations has required accredited associations to offer influenza vaccinations to staff, including volunteers and licensed independent practitioners, with close patient contact. Influenza vaccination rates for HCWs have tended to be low,4-6 and despite many campaigning methods to increase uptake many HCWs still choose not to be vaccinated against influenza.5,7-9 Several studies have been published recently exploring the reasons for HCWs not being vaccinated.5,9-11 While many studies point to fear of side effects,14-16 lack of knowledge about the possible severity of influenza,16 as well as vaccine accessibility14 as key factors in health care workers' decisions about being vaccinated, few have proposed clear policy implications for the health care system.

In British Columbia (BC), all health care facilities (acute, long-term, intermediate and extended care facilities) are required to have a written staff policy on influenza immunization in place that includes notice that non-immunized staff can be excluded from work without pay in the event of an influenza outbreak in the facility.17 BC has adopted the stance that “Refusal of health care workers to be immunized implies failure in their duty of care to their patients. Non-immunized staff assist in the spread of influenza and pose an unacceptable risk to patients and co-workers during outbreaks.”18

This type of policy is now quite common, and mandatory vaccination for HCWs, with a provision for declining vaccination on the basis of religious or medical reasons, is increasingly promoted.19,20 Fifteen US states have regulations regarding vaccination of health workers in long-term care facilities, three states require that health care facilities offer influenza vaccination to staff, and three states require that HCWs either receive influenza vaccination or indicate a religious, medical or philosophical reason for not being vaccinated.21

This article describes the results of a research study in which focus group sessions were held in long-term, acute and community care settings in BC to probe the barriers and facilitators to health care workers being vaccinated against influenza. Our objectives

Acknowledgements: We thank the Canadian Institutes of Health Research for providing funding to examine the barriers and facilitators to the uptake of influenza vaccine for health care workers, and the Canada Research Council. We also acknowledge the support of the Occupational Health and Safety Agency for Healthcare. We would like to particularly thank Fraser Health, Vancouver Island Health Authority and Interior Health for their support and participation in this study, as well as the unions representing health workers, including the BC Nurses’ Union, Hospital Employees’ Union, BC Government Employees’ Union and Health Sciences Association, and we are grateful to all of the health care workers who participated.

Conflict of Interest: None to declare.

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were to explore the views of BC health care workers regarding how best to promote vaccine uptake. These focus groups were part of a larger study, which sought to understand the usefulness of a web-based surveillance system in tracking influenza vaccination in health care workers.

METHODS

Setting
Focus group sessions were conducted in three of five geographic health regions in BC: Vancouver Island, and the Interior and Fraser health authorities, together making up 60% of the province’s total facility-based health care workforce. The group meetings were held in October and November as the influenza vaccine promotions were just beginning and were open to all HCWs working in these three health regions who identified themselves as having direct patient contact in their work.

Site selection
Sites were chosen on the basis of their staff uptake rates for influenza vaccination in the previous influenza season, by subsector. This study focused on long-term care, acute care and community care facilities. Sites were divided into thirds, by their uptake rates, with the middle third being discounted. The upper third and the lower third were targeted, and sites were chosen according to their geographic locations and size of their workforce (larger sites would be easier to recruit participants).

Focus groups
The study was advertised to eligible HCWs through posters and brochures in their facilities and internal workplace E-mail. Participants pre-registered for the focus groups by telephoning the project coordinator and received an honorarium of CDN $55 for their participation. The vaccination status of individual HCWs was not queried during the focus groups because workforce motivators and/or the barriers to being vaccinated were of main interest and not necessarily what motivated the participants’ own actions. Occupational groups were mixed. The questions asked in the focus groups aimed to explore the motivators and barriers to HCWs being vaccinated. They were derived by the research team from findings in the scientific literature.22-24 and from a telephone survey conducted earlier in 2006.25 Reasons explored fell into two broad categories: organizational and individual.

Analysis
Coding and analysis of the focus groups’ discussions used NVivo software (QSR International, version 7.0), as well as a separate, editing analysis style whereby dominant themes were allowed to emerge from the focus groups rather than being imposed a priori. The audio files for each focus group were transcribed verbatim. Each transcript was analyzed independently for common themes by two key readers who examined them for key phrases and recurrent concepts. Focus group outcomes were both analyzed and interpreted by key readers who examined them for key phrases and recurrent concepts. Focus group outcomes were both analyzed and interpreted by key readers who examined them for key phrases and recurrent concepts.

RESULTS

A total of 83 HCWs were given the opportunity to speak in 10 focus groups, which lasted approximately 70 minutes (range 50-90 minutes). Study participants included 45 HCWs from long-term care, 23 from acute care and 15 from community care facilities. Overall, 76 women and 7 men participated, covering a wide range of occupations, such as registered nurses, licensed practical nurses, unit clerks, physicians, care aides, dietary staff, housekeeping and kitchen staff, occupational therapists, librarians, hairdressers, laboratory staff, home support workers, psychiatric support workers and recreational aides. The mixing of diverse occupational groups led to rich discussion.

Four dominant themes emerged from the focus groups: knowledge, communication, perceived punitive nature of workplace policy and safety climate.

Knowledge
HCWs who participated in the focus groups felt that they lacked information about the vaccine, its long-term effects and its effectiveness, and were not provided with sufficient information to be able to make an informed choice. Workers also spoke of the personal nature of vaccination and how it should be a choice, an informed choice, as to whether or not they receive the vaccine.

As one focus group participant stated:

Yeah, because getting an immunization I think is a personal choice. And when you’re told you’re going to be penalized because of your choice, I don’t think—that’s not right.

Communication
HCWs across all focus groups expressed frustration at the simplicity of the messages put forward in influenza campaigns – they wanted more scientific information (access to both systematic reviews and peer-reviewed materials). They also wanted more targeted information, specific to them as health care workers, rather than the same material used to inform the public on vaccine campaigns. In addition, they noted that the influenza campaign communications should include reinforcement of basic principles of infection control and healthy lifestyle choices that affect overall health. They felt that the current influenza campaign was conducted in isolation from other workplace health promotion activities, and they hoped for a more unified message about the importance of workers’ health and safety on an ongoing basis.

Perceived Punitive Nature of Workplace Policy
HCWs strongly indicated that they wanted a workplace policy that is easy to understand, that is not punitive and that respects individual choice. A participant spoke on the importance of choice:

Those e-mails have been sent out is kind of using that ultimatum. It’s saying that you have a choice, but, this is what will happen if you get sick. And I think for a lot of people, especially folks who have families, or well, people, money—it comes down to getting a paycheck. Some people can’t afford to take the risk of potentially getting the flu for the sake of the fact that they won’t be respected for that particular illness because the employer has made a decision for you about how to avoid that illness, whereas they are not making that decision about other illnesses for us. But we’re not allowed to decide how we manage that illness really. I mean, we can, but we take the risk of being withheld pay, and I don’t think that’s necessarily the most effective way to encourage.

Many workers felt in the event of an influenza outbreak in a facility, management should look at alternatives for non-immunized HCWs, such as a temporary re-assignment to other work, and they
felt that they should not be forced to be immunized against influenza through workplace policy. As one participant stated:

I think the coercion backfires in that it gets people’s backs up, and then they become more polarized... I think there should be enough education out there that you’re allowed to make a respectful independent decision based on your own views and experience with the understanding that our mandate is to protect the elderly.

Another HCW stated:

... it is extreme pressure from, you know, people, the managers, especially in residential. We had an outbreak in September ... We had lockdown for ten days, but the families are still allowed to come ... Who knows if they’ve been vaccinated? They put all this pressure on the staff to get vaccinated but, you know, in residential you can’t bar families from seeing their loved ones, which I could see, but you’re still having the traffic in and out of people.

Safety climate
Workers felt that the influenza campaign was a standalone push to get workers to be vaccinated. One focus group participant asked:

So if they’re going to be so entrenched about one aspect of infection control, which is immunization, why shouldn’t they be, you know, equally vigorous about other infection control procedures?

Many focus group participants stated that their workplaces did not promote a culture of safety for them, as workers, and therefore it seemed hypocritical to push workers to be vaccinated when they were not so actively encouraged in other areas (i.e., hand washing, healthy eating, etc.). Workers perceived that management could reassign workers during outbreaks so that those who have not been vaccinated could still work elsewhere, however workers believed there was a lack of interest by management in doing this type of shuffling. Workers consistently focused on the need for their facilities to create a safety culture where vaccination, hand-washing and proper quarantine procedures go hand in hand and are linked with the well-being of the workforce, not just the patient population.

Workers from long-term care facilities who participated in the focus groups (four sites) consistently spoke about the public, such as visitors to the facility, and the need for greater education about the importance of hand washing for visitors. Workers who were in community care facilities and in long-term care seemed to emphasize more the pressure to be vaccinated, which was perceived to come from co-workers as well as from management. One worker in long-term care stated:

I think there’s peer pressure, even at our age, I think there is.

While we made no attempt to stratify responses by type of facility, we noted that peer pressure was mentioned in low-uptake facilities, both long-term care and community care, as well as the fact that this pressure can go both ways:

Peer pressure. If there are enough of you in your group and they’re all kind of, “Oh, I don’t think it’s a good idea”, then you buy into it, and you strongly believe—I will not.

This group thinking as well as anti-vaccine co-workers were mentioned throughout the focus groups as having a role in an individual’s decision-making process.

Workers in acute care stressed the need for more information prior to vaccination but also noted that those providing the vaccine were very accommodating. One participant from an acute site stated:

One of the positive things I think about our centre is that there are a minority of people, which I am one of them, who has a real fear of vaccinations and the centre has really tried to make it easier for us. Like we go to the head of the line to have our vaccinations done and the nurses will even let us choose what site we get it in because I won’t take a vaccination in the arm at all. So they say, well do you want it here or there and they never make you feel bad about it, which I think is positive.

Participants within both high-uptake facilities and low-uptake facilities spoke of similar themes, frustrations and strengths of their workplace influenza campaigns. An important discussion stream in both high-uptake and low-uptake facilities focused on the most common source of information about vaccines; workers in both types of facility spoke about getting information from co-workers. This knowledge sharing could be a reinforcing factor in the high-uptake facilities (i.e., most workers are vaccinated and thus are pro-vaccination) whereas in the low-uptake facilities it could result in swaying co-workers in the opposite direction (i.e., a strong anti-vaccine voice changing behaviours against vaccination).

DISCUSSION
There has been debate in the peer-reviewed literature as to whether health care workers should be given a choice to be vaccinated against influenza or whether it should be mandatory.27,28 Many different opinions have been put forward as to why health care workers must be vaccinated against influenza (including, but not limited to, decreases in influenza-related illness and absenteeism among health care workers, as well as fewer acute care outbreaks and reduced patient mortality in long-term care settings),29 though clear evidence showing the direct benefit of HCW influenza vaccination is lacking.30,32 We found, unequivocally across the 10 facilities and all subsectors, that HCWs spoke of the importance of the personal nature of making the choice, or not, to be vaccinated.

We found that HCWs expressed frustration at the simplicity of vaccination campaigns, which they felt lacked scientific information, i.e., access to both systematic reviews and peer-reviewed materials. Though previous work has espoused the importance of a multiple intervention approach for this complex issue,31 this study sought to discover the reasons why HCWs did not feel compelled to be vaccinated, despite multiple promotional/campaigning methods. HCWs expressed the need for a broadened communication campaign with regard to influenza vaccination in which basic principles of infection control and healthy lifestyle choices are included. They felt that current influenza vaccination campaigns were conducted in isolation from other “health promotion” activities, and they wanted a more unified message about the importance of workers’ health and safety on an ongoing basis. HCWs want workplace policy that is not punitive and respects individual choice: many HCWs felt that management should re-assign HCWs during outbreaks as an alternative to exclusion from work without pay. Workers also felt peer pressure in the workplace and sensed that they would be punished by management if they did not choose to be vaccinated. HCWs spoke about the need for the vaccine to be available in their workplace, as this access to the vaccine is a key factor in their decision to receive it.

There are limitations to qualitative methods, such as the use of focus groups, the chief one being that this small sample of HCWs cannot be considered representative of all health care workers. Another possible limitation of our study is that we only interviewed workers who identified themselves as having patient contact: HCWs who work with patients may experience very different moti-
vations for receiving the influenza vaccine, in either a positive or negative way (workers who feel that they have done enough for their patients in choosing not to be vaccinated vs. workers who are vaccinated as they “care” about their patients’ well-being). We also did not ask individuals in our focus groups to identify their occupation, and so there was no controlling for occupational group in our analyses. Another limitation is that facilities were selected for inclusion on the basis of overall facility uptake of the influenza vaccine in the previous year as well as facility type (acute, community and long-term care), but there was no controlling for other factors, such as facility size or location (urban vs. rural). Also, though facilities were selected according to uptake, individuals were not pre-screened for their individual uptake, and thus we may have had many non-vaccinated in a high-uptake facility, and conversely in a low-uptake facility our focus group may have comprised mainly individuals who were strongly pro-vaccination.

This is one of the first studies in Canada to explore in-depth attitudes towards workplace vaccination in HCWs in the community sector, long-term care, as well as acute care. Our findings highlight the importance of a comprehensive approach, a message that has not appeared as strongly in previous literature. A major theme that emerged in all our focus groups was health and safety at work generally and the importance of creating a healthy workplace culture in promoting adoption of this vaccine. This is also consistent with previous research illustrating that the most consistent determinant of adopting safe work practices is the safety climate, that is, employees’ perception of organizational commitment to safety.14-37 Our previous research17-46 and that of others15,36 suggests an important link between providing health and safety training to health professionals and the perceived safety climate in the organization. Indeed, we found that those required by their supervisor to take an infection control course were actually more likely to make positive statements about the safety climate in their organization than their counterparts who took the course on their own initiative.49 This suggests that HCWs are not averse to mandatory policies that promote workplace safety but are averse to policies that seem targeted at them as vectors of disease transmission rather than being put in place in an effort to protect their well-being. Workers in this influenza vaccine study reported feeling unsupported, and they wanted a more comprehensive approach to health promotion. We thus conclude that future vaccine promotion initiatives should be integrated into facility-wide workplace health promotion campaigns, and care should be taken to ensure that the vaccination campaign does not appear to HCWs to be at all coercive or punitive.

REFERENCES


**Résumé**

**Objectifs :** En Colombie-Britannique (C.-B.), au Canada, tous les établissements de soins de santé doivent avoir une politique écrite sur la vaccination antigrippale du personnel. Cette politique prévoit que le personnel non vacciné peut être exclu du travail sans salaire durant une écllosion d’influenza dans l’établissement. À la lumière de cette politique, nous avons voulu connaître le point de vue des travailleurs de la santé (TS) de la C.-B. sur le meilleur moyen de promouvoir l’acceptation du vaccin.

**Méthode :** Les établissements de soins prolongés, de soins actifs et de santé communautaire de trois des six régions sanitaires de la province ont été divisés en tiers selon leurs taux d’acceptation du vaccin pendant la saison vaccinale précédente et les tiers supérieur et inférieur ont été ciblés. Dix rencontres ont été tenues en groupes de discussion. Les résultats ont été analysés à l’aide du logiciel NVivo (QSR International) et de directives d’édition distinctes.

**Résultats :** Quatre grands thèmes se sont dégagés : les connaissances, la communication, le caractère punitif perçu de la politique de l’établissement et le climat de SST. Dans tous les groupes de discussion, les TS ont indiqué que les communications sur la campagne antigrippale devraient porter sur le renforcement des mesures de base de prévention des infections, sur la santé au travail et sur les choix de modes de vie qui influencent la santé générale. Les TS ont dit vouloir que la politique de l’établissement soit facile à comprendre, qu’elle respecte les choix personnels et qu’elle ne soit pas punitive.

**Conclusion :** Nos constatations soulignent l’importance d’une approche globale, ce qui ne ressortait pas aussi clairement dans les travaux publiés auparavant. Les participants des groupes de discussion ont souligné l’importance de la santé et de la sécurité au travail en général; selon eux, pour promouvoir l’acceptation du vaccin, il faut que la santé au travail fasse partie de la culture organisationnelle. Les futures initiatives de promotion du vaccin devraient donc s’inscrire dans des campagnes de santé au travail à l’échelle de l’établissement, et des efforts déployés pour éviter que les campagnes de vaccination semblent coercitives pour les TS.

**Mots clés :** vaccination antigrippale; travailleurs de la santé; culture de la santé et de la sécurité
ABSTRACT

In Canada, many datasets are initially collected for purposes other than occupational health and safety (OHS) research. These include administrative health care billing records, pharmaceutical records, vital statistics, provincial cancer registries and workers’ compensation claims data. In addition, many national and provincial health surveys, while not focused specifically on occupational health and safety, collect data on the health status and health determinants of populations, and such data can be used for investigating OHS issues among Canadian workers. This paper provides examples of the use of administrative and survey data for OHS research projects from the provinces of Quebec, Ontario and British Columbia to illustrate the potential of such data. These three provinces have a long history of using administrative and survey data for OHS research and have developed capacity in this regard for improving access to data, for linkage of records across databases and for developing methods to answer OHS questions. As research using these data sources expands, a consistent understanding within the work and health research community must be forged concerning the strengths and limitations of these data resources and their comparability.

Key words: Surveillance; work injury and illness; Quebec; Ontario; British Columbia

The relation between working conditions and health outcomes is an important public health concern. In 2007, almost 1 million Canadians experienced non-fatal occupational injuries and diseases that required health care and/or time off work. In 2006, nearly $7 billion (more than $450 per insured worker) was spent on wage loss, health care and rehabilitation of workers covered by workers’ compensation boards in Canada (approximately 83% of the Canadian workforce). Among Canadians between 15 and 64 years of age, 21% of all traumatic injuries occur at work, as do 52% of all repetitive movement injuries.

Working conditions have important links to health status outside of work injury. The psychosocial work environment is at least as important as health behaviours in the development of cardiovascular disease. Longitudinal research also suggests an association between stressful psychosocial work environments and poorer mental health. Physical work demands and various psychosocial work exposures are also key determinants of musculoskeletal health. Additionally, occupational morbidity and mortality related to workplace exposures contribute significantly to the total disease burden in Canada.

The objective of this paper is to describe survey, administrative and linked data resources that are available nationally, with examples drawn from the provinces of Ontario, British Columbia and Quebec. We highlight the potential of these data to generate occupational health and safety (OHS) knowledge over (relatively) short time periods in a cost-effective manner. Many of the administrative and secondary data described in this paper were originally collected for purposes other than OHS research. There are also numerous national and provincial health and labour force surveys that collect measures relevant to OHS within a broader examination of health determinants and health status that could be used to pursue research in this area.

In each of the following sections we have described these data sources, outlining the content available, coverage and types of policy-relevant research questions that can be, or have been, answered using the data source (examples of papers using each data source are available in Appendix 1). We conclude by highlighting lessons learned and some ongoing challenges for using the data described here. In each section we first describe national resources, followed by resources within the provinces of Quebec, Ontario and British Columbia. Our focus is on only these provinces is related to our experience with these resources and, therefore, our ability to comment on the challenges and benefits associated with the data. Administrative data (e.g., workers’ compensation claims) have been used for research in other provinces, such as Alberta and Manitoba, and in some cases have been linked to other data resources, such as cancer registries, and provincial health plan data and responses to health surveys.
the 1986 Canadian Census long form.14 Despite restricting our focus to the three provinces, we do feel that the strengths and limitations pertaining to their resources as discussed in this paper are generalizable to other provincial settings.

**Survey data**

Statistics Canada conducts numerous national surveys that can be used for work and health research. Three datasets collect data on work injuries: the National Population Health Survey (NPHS), the Canadian Community Health Survey (CCHS) and the Survey of Labour and Income Dynamics (SLID). These datasets enable researchers to examine a broad array of factors not available in compensation claim reports (such as psychosocial work conditions and shift work) for work injury and allow comparisons between self-reported injury rates and rates of compensation claims within provinces.15

The NPHS collects data on health conditions, health behaviours and labour market conditions on a longitudinal, nationally representative cohort of Canadians every two years.16,17 Seven cycles of the NPHS are available for analysis (1994, 1996, 1998, 2000, 2002, 2004 and 2006). The CCHS – initiated in 2000-01 – collects data similar to that of the NPHS from a cross-sectional sample of over 130,000 respondents every two years, with smaller samples interviewed on particular topics in the years in between. Both surveys ask respondents about injuries that occurred in the previous 12 months that have limited their normal activities, whether the most serious injury required medical attention and whether it occurred at work. Respondents are also asked to report repetitive strain injuries (RSI) that limited normal activities in the previous 12 months (although specific attribution to work is only available from 2000 onwards).

To date these surveys have been used to examine factors related to work injuries among youth16,17 and recent immigrants.20 The surveys have also been used to examine the contribution of psychosocial work conditions to risk of RSI,21 occupational exposures to asthma22 in combination with an externally developed exposure matrix,23 and the associations of occupation and work organization conditions with mental health.24,25 Unfortunately, in recent cycles of the CCHS the already limited amount of data on relevant labour market activity and psychosocial work exposure variables has been moved to optional content (i.e., the inclusion of this information is at the discretion of a particular health region), resulting in non-random, selective samples of participants and reducing the utility of this data source.27 In addition, attribution to work is only enquired into for acute injuries and RSI, with no questions asked about attribution to work for causation or aggravation of chronic conditions that are captured in each survey. Finally, the already limited, and decreasing, occupation and industry information collected limits the ability of researchers using these data to categorize groups of workers according to exposures and working conditions using alternative sources (e.g., exposure matrices).

The SLID – an ongoing representative longitudinal survey of Canadians – contains data on labour activity, income and wealth, education and personal characteristics. It has longitudinal and cross-sectional components. Each longitudinal cohort contains approximately 40,000 respondents, followed for six years. Longitudinal cohorts were initiated in 1993, 1996, 1999, 2001 and 2003, providing a three-year overlap between contiguous panels, which allow cross-sectional samples of approximately 60,000 respondents each (from 1996 onwards). The SLID contains more detailed data on labour market participation, although it lacks detailed data on health conditions. Respondents report absences from work lasting at least one week in the previous 12 months and whether they were work related.20,29 Data are also collected on compensation during each absence, allowing examination of the factors associated with the receipt of compensation after a work absence.29 The longitudinal nature of the SLID also allows examination of future earnings after work absences.30

The above surveys have the advantages of rigorous sampling frames and high response rates, making them representative of the Canadian population, with sample sizes that often permit provincial-level analyses. Although these surveys are broad in their scope and coverage, the lack of detail on occupational and industrial classifications, particular working conditions, and attribution to work of some of the health outcomes collected limits their extensive use for OHS research.

Other pan-Canadian survey data worthy of brief mention include the Participation and Activity Limitation Survey, which is administered to all persons who were living in Canada at the time of the Census and responded positively to either of the Census questions on activity limitations. The 2005 National Survey on the Work and Health of Nurses, which covers a large sample of registered nurses, licensed practical nurses and registered psychiatric nurses, provides quite detailed data on the health and working conditions of nurses in Canada.31 The Workplace and Employee Survey (WES), now discontinued, was a unique survey that administered questionnaires to both employers and employees, resulting in a linked employer-employee file.32 Finally the Longitudinal Survey of Immigrants to Canada (LSIC) is a cohort of approximately 12,000 immigrants arriving in Canada in 2000-01 and followed for four years. Unfortunately, both the WES the LSIC, while capturing detailed labour market and workplace data, have limited data on health outcomes attributable to work or work injury. The addition of this information in both surveys (or the linking of these surveys with compensation claim data) would have allowed more detailed examinations of how workplace factors affect work injury rates (in the WES) and a better understanding of the risk of injury and factors associated with injury among recent immigrants to Canada.

At a provincial level, the Quebec Health and Social Survey (QHSS) is a cross-sectional health survey carried out in 1987, 1992 and 1998. Since 1998 the QHSS has been replaced by the Canadian Community Health Survey, although in 2008 a new Quebec population health survey was conducted to include health outcomes and determinants measured in previous QHSS but not included in the CCHS surveys. The QHSS was a household survey of a representative sample of the general population using a complex sampling design to ensure that there was adequate regional representation. The 1998 QHSS survey included approximately 12,000 households, providing data on over 30,000 individuals; a self-administered questionnaire that included an extensive section on work and occupational health and safety was given to all household members aged 15 and over, and provided self-reported information on approximately 20,800 of the 30,000 respondents, including 11,735 workers. Thus, this survey has allowed examination of the association between a variety of health outcomes and work exposures while taking into account numerous personal fac-
USING DATABASES AND SURVEYS FOR OHS KNOWLEDGE

The QHSS surveys have been used to study variation in workers’ mental health and alcohol intake and to identify work-related and non-work exposures associated with musculoskeletal disorders.34-37

In 2004, legislation was introduced in Quebec that mandated regular surveys of working conditions in the Quebec population every five years. Thus, a new survey, the Quebec Survey of Working Conditions and Occupational Health and Safety, was designed and carried out collaboratively in 2007/08 by the Institut national de santé publique du Québec (Quebec’s institute of public health), the Institut de recherche Robert-Sauvé en santé et sécurité du travail (Quebec’s OHS research institute), the Institut de statistique du Québec (Quebec’s statistics institute), as well as the Quebec ministries of health and social services and of labour. This household-based telephone survey of a representative sample of 5,000 workers includes exposure data on a wide range of working conditions and outcome data on mental health, musculoskeletal outcomes and work injuries. It will be possible to link these data to the Régie de l’assurance maladie du Québec (RAMQ) health services utilization data for the respondents who have consented to this linkage (see administrative section below for more details on this data resource). The survey is currently under analysis by the research team that developed it. Once their report is published in 2010, the data will be made available to other researchers.

Apart from the Ontario Child Health Survey, which has been used to examine the effects of early childhood experiences on working status and work-related outcomes,42 there are no other provincial work and health surveys regularly conducted on representative samples in Ontario or British Columbia, making the ongoing active surveying of working conditions in Quebec unique in this context.

Administrative data

The majority of administrative data available for OHS research exists at the provincial level, partly as a result of workers’ compensation and prevention, covering approximately 85% of Quebec workers across 243,575 companies.43 The CSST’s annual database of occupational injuries and diseases (fichiers des lesions professionnelles) is a rich source of data on occupational injury and diseases, including injured worker and workplace data, the type and cause of the injury, and subsequent consequences (health and financial). Quebec researchers have used these data to study various types of injuries, disorders and fatalities, as well as to identify subgroups of workers at highest risk of compensation for various disorders (by industry, sex, type of occupation, age), allowing more targeted preventive efforts.44-47

Employees working for workplaces covered by the Ontario Workplace Safety & Insurance Board (WSIB) are required to submit claims for injuries sustained at work that result in health care and/or time off work. Coverage by workers’ compensation in Ontario is one of the lowest in Canada,1 yet approximately 65% of the Ontario workforce is covered by the WSIB.48,49 Reports for lost-time claims contain data on demographic characteristics, occupation, industry and job tenure, allowing for the calculation of rates of lost-time claims across various labour force subgroups.50-52 Information on health care and wage replacement associated with each injury is also available, allowing examination of injury consequences. Similar compensation claim data are available in British Columbia through WorkSafeBC, although the potential of this compensation data is enhanced by 93% workforce coverage and by the extensive linkages with other databases (see next section).

As with any data collected for purposes other than research, there are ongoing challenges in administrative data, such as workers’ compensation claim data, related to missing fields of information, differences in legislation on claim reporting and differences in classification systems (in particular those related to industrial coding), which make provincial comparisons challenging. Compensation agencies have the mandate to store information electronically that is of relevance to the assessment of the claim and the provision of compensation benefits. This generally extends to the date of injury, the occupation, industry, age and sex of the claimant, as well as details about the injury (nature, event, part of body, source), which are coded to the Z795 Canadian Standards Association scheme in each province.56 Information on other variables of interest to OHS research, such as pre-existing health conditions, information about the workplace (worksite) or other socio-demographic information (immigration status, education level) is not available in these data.

Linked data

Linked data available at the national level include CAREX Canada, a Canadian Workplace Exposure Database that is being created on the basis of exposure measurement data collected by both provincial and federal agencies, as well as by Canadian researchers and employers who are willing to share their exposure data information. This information is being combined with the Canadian Census and Census of Agriculture data to estimate the number of workers exposed to known carcinogens according to their reported occupation and industry of employment (see http://www.carex-canada.ca/ for more information). The Longitudinal Administrative Databank (LAD), a longitudinal sample of tax filers for the years 1982 to 2006 with data on income and demographic variables contained in tax file reports (e.g., marital status, income sources), has been linked to samples of workers’ compensation claim reports in Ontario and British Columbia. The Census Mortality Database is a recent record linkage performed by Statistics Canada of a 15% sample from the 1991 Canadian Census linked to the Canadian Cohort Mortality File over a 10-year follow-up period. The linkage allows data on education, occupation and work schedules to be linked with causes of mortality over a 10-year period. In each of the above cases, the linkage of these databases has increased the utility of both sources for OHS research. In the case of the Canadian Mortality File and the LAD, in particular, data linkage has resulted in the ability to utilize data that, without linkage, could not have been used for OHS research.

In Quebec, data from the CSST and the various health and working condition surveys described previously have been analyzed to identify groups at high risk of occupational exposures or disease and to target preventive interventions carried out by occupational health professionals working in regional and/or local public health centres in collaboration with other occupational health prevention agencies.57,58

In Ontario, the Institute of Clinical and Evaluative Sciences has linked the 2000-01 and the 2003-04 CCHSs with the Ontario Health Insurance Plan and the Canadian Institute for Health Infor-
mation hospitalization database at the individual level. This allows data from the CCHS to be used to prospectively examine the impact of working conditions and health behaviours on the incidence of diseases such as diabetes, hypertension and cardiovascular disease.

The Institute for Work & Health has linked lost-time claims from motor vehicle accidents from the Ontario WSIB with vehicle driver records in the Accident Database System maintained by the Ontario Ministry of Transportation to examine differences in collision circumstances across occupations. Future possible data linkages worth pursuing in Ontario include the linkage of Ministry of Labour inspection data with WSIB claim data. This database could then be used to examine the relation between inspection activity within industry groups and changes in claim frequency.

British Columbia leads Canada in the number and scope of currently linked data resources. This capacity enables researchers across Canada to conduct a broad range of occupation health research in the British Columbia population that is simply not possible in other provinces. Population Data BC,* previously known as the British Columbia Linked Health Database, administers a growing set of linkable data applicable to research on the entire working age population over a 25-year period. Data include workers’ compensation claims linked at the individual level with provincial health insurance registry records, hospital separation records, outpatient medical service records, cancer registry data, prescription data, vital statistics data and some Statistics Canada surveys (e.g., CCHS).

This extensive data resource has enabled a variety of novel applications relevant to OHS research. For example, data on asthma-related outpatient medical visits, hospital separations and accepted workers’ compensation claims have allowed specific estimates of occupation-related asthma to be compared with the number of individuals receiving compensation for asthma. Similarly, linkage of individuals with mesothelioma in the BC Cancer Agency registry with accepted mesothelioma workers’ compensation claims was possible. This research found that less than half of all individuals with mesothelioma in British Columbia seek compensation from WorkSafeBC, despite most mesothelioma cases being attributed to occupational exposure. This work prompted further research on the surveillance of other asbestos-related diseases and an intervention by letter to increase awareness of compensation benefits among mesothelioma cases in the cancer registry.

Linkages of external datasets, such as employment records or exposure assessments, with workers’ compensation data and other health databases through Population Data BC, and formerly the British Columbia Health-Linked Database, have made it possible for researchers to conduct cohort and case-control studies on the relation between numerous health outcomes and working conditions among BC workers. An example, the BC Sawmill Cohort Study, initially linked employment records for approximately 30,000 workers in 14 sawmills in BC with health outcome data (e.g., cancer registry, vital statistics) and further linked them with researcher-collected exposure data to examine the health effects of chlorophenate fungicides on cancer outcomes. This cohort has led to numerous other occupational health-related studies and linkages with other health databases (e.g., medical services and hospitalization data) investigating the effects of noise exposures on cardiovascular outcomes, cancer risks among the children of sawmill workers exposed to carcinogens and the effects of economic downturns and psychosocial conditions on mental health, including the role of parental psychosocial work conditions on the mental health outcomes among children of sawmill workers. This model of linked data using a combination of health care, researcher and/or employer databases has also been frequently used to support master and doctoral thesis work in the field of occupational health.

Other occupation-related research using Population Data BC data has looked at the effect of pre- and post-claim health care utilization in a cohort of injured health care workers, the use of hospitalization records for the surveillance of serious work-related injuries and the use of linked health databases (outpatient, inpatient, compensation claims) for the surveillance of occupational diseases such as asbestosis. Current research is also using workers’ compensation surgery data and medical records to examine the effect of workers’ compensation policy on surgical wait time, return to work and complications among workers undergoing surgery in private clinics versus public hospitals.

Recently a research partnership between WorkSafeBC and researchers at the University of British Columbia was formed to enhance occupational health research capacity using workers’ compensation data through Population Data BC and to promote and support the use of this resource by other occupational health researchers. To this end, Population Data BC is in the process of enhancing research access to linked data, including expanding data holdings for occupational health and safety researchers to include environmental and occupational exposure data. Access to approved research data extracts will be available to researchers throughout Canada through a secure remote access.

The data linkage capacity available in British Columbia is unique to Canada, the linkages in other provinces (such as Alberta) being project specific. While the RAMQ, Quebec’s public health insurance board, maintains databases on hospital stays and on doctor visits that could potentially be used for research, data linkage to date in Quebec has not extended to this area. Similarly, in Ontario there is no currently available capacity to enable linkage of data from the WSIB to the Ontario Health Insurance Plan, limiting the capacity in both these provinces to undertake work similar in scope to that currently being undertaken in British Columbia (and, to an extent, Alberta).

**CONCLUSIONS**

In this paper we have outlined administrative, survey and linked data sources in Canada, and in Quebec, Ontario and British Columbia. These datasets allow insights into OHS research that can be completed in a timely manner and can contribute to knowledge on how working conditions and various aspects of health are related (Appendix 1 provides examples of papers, by province, that have been produced using these data sources). However, using these data is not without its challenges; in particular, administrative datasets may use different occupational and industrial coding schemes that can make linkages and comparisons for occupational research difficult. Understanding the burden of work injury represented by workers’ compensation data is hindered by difficulties in estimating accurate workforce denominator data, with researchers in each

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* http://www.popdata.bc.ca

† Refer to http://www.popdata.bc.ca/dataaccess/ for steps on how to access the data.
province estimating the insured labour force using Statistics Canada census data, Labour Force Surveys and the Surveys of Employment Earnings and Hours.

Knowledge generated through the data sources in this paper has affected OHS practices outside of academia. For example, work on job tenure and work injury has been incorporated into the Ontario WSIB’s 2006 young worker safety awareness campaign. The work in British Columbia on mesothelioma and workers’ compensation benefits prompted the BC Cancer Agency, with the support of WorkSafeBC, to send letters to physicians of patients with newly diagnosed cancer to encourage patients with mesothelioma to seek workers’ compensation benefits. In addition, the surveillance research on occupation-related asthma in BC helped inform changes to compensation policy regarding work-aggravated asthma. In Quebec, as previously mentioned, analysis of compensation data on musculoskeletal disorders has informed public health priorities for prevention.

As outlined, there is diversity in the data resources among Canadian provinces, with British Columbia being the only province to allow an ongoing linkage of compensation claim data with other data sources for research purposes. Research procedures and protocols for data linkages with more jurisdictions would allow comparative research into differences in provincial policy, legislation and occupational exposures/working conditions and the role these play in the prevention and consequences of work injuries. As evidenced by the novel OHS research that can be conducted in British Columbia, national and provincial research funders and the OHS research community should support and promote the utility of research from such linkages, as well as the required infrastructure and optimal research methods for each of these data sources. By doing this, we can significantly increase the potential use of data that are already collected in Canada to better understand the relations between working conditions and health outcomes, improving the health of all Canadians.

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RéSUMÉ

Au Canada, de nombreuses bases de données sont recueillies au départ dans d'autres buts que la recherche sur la santé et la sécurité du travail (SST) : les fichiers de facturation des services de santé, les fichiers pharmaceutiques, les registres d'état civil, les registres provinciaux du cancer et les fichiers d'indemnisation des lésions professionnelles. De plus, beaucoup d'enquêtes fédérales et provinciales sur la santé, bien qu'elles ne portent pas spécifiquement sur la SST, recueillent des données sur l'état de santé et les déterminants de la santé des populations, et ces données peuvent servir à étudier des questions de SST dans la main-d'œuvre canadienne. Dans cet article, nous donnons des exemples probants de l'utilisation de données administratives et de données d'enquête pour des projets de recherche en SST dans les provinces du Québec, de l'Ontario et de la Colombie-Britannique afin d'illustrer le potentiel de ces données. Ces trois provinces utilisent depuis longtemps des données administratives et des données d'enquête pour la recherche en SST et ont développé des capacités à cet égard pour améliorer l'accès aux données, jumeler les dossiers de différentes bases de données et élaborer des méthodes pour répondre aux questions de SST. Comme il se fait de plus en plus de recherche à l'aide de ces sources de données, la communauté des chercheurs en SST devrait développer la même compréhension des forces et faiblesses de ces sources de données et de leur comparabilité.

Mots clés : surveillance; accidents du travail; maladies professionnelles; Québec; Ontario; Colombie-Britannique
Second WCB Claims: Who Is At Risk?

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ABSTRACT

Objectives: Many workers with one Workers’ Compensation Board (WCB) claim make further claims. If the characteristics of the job, initial injury or worker were predictive of an early second claim, interventions at the time of return to work after the first claim might be effective in reducing the burden of work-related injury. This report explores the characteristic of those who make a second claim.

Methods: Records of all Alberta WCB claims from January 1, 1995, to December 31, 2004, for individuals 18 to <66 years old were reviewed. For each individual’s first claim, sex and age of claimant, type of injury, type of accident, occupation, industry, an indicator of company size, and industry claim rate were extracted, as well as the date of any second claim. The likelihood of second claim and mean time to second claim were estimated. Multivariate analyses were performed using Cox regression.

Results: 1,047,828 claims were identified from 490,230 individuals. Of these, 49.2% had at least two claims. In the multivariate model a reduced time to second claim was associated with male sex, younger age and some types of injury and accident. Machining trades were at highest risk of early second claim (hazard ratio [HR] 2.54 compared with administration), and of the industry sectors manufacturing was at highest risk (HR 1.37 compared with business, personal and professional services).

Conclusion: Some caution is needed in interpreting these data as they may be affected by under-reporting and job changes between claims. Nonetheless, they suggest that there remains room for interventions to reduce the considerable differences in risk of a second claim among workers, jobs and industries.

Key words: Work-related; occupational; WCB claim; risk factor

10,725 eliminated, as has been described in an earlier report. The final dataset contained only one record for any WCB claim on a given date. Finally, the records were linked with Alberta Health and Wellness administrative databases, which allowed confirmation of residence within the province. During this process, the PHN provided by the WCB was verified (using sex, month and year of birth), and 80,438 records with an invalid PHN were discarded, leaving a total of 1,047,828 claims for analysis.

Information on the nature of the incident that triggered the first claim and the resulting injury was included in the WCB dataset as a text file, using standard phrases that could be regrouped to the incident type (eight codes) and injury type (12 codes) used in WCB publications. A 4-digit occupational code had been supplied by the WCB for the work done at the time of the event that triggered the first claim (the injury or the onset of symptoms for a chronic condition). The code was a WCB adaption of the 1980 Standard Occupational Classification and was recoded for this analysis to occupational order (23 groups). Industry was coded for the analysis to the 2-digit industry sector code developed by the WCB (9 groups). If industry was known, additional information was supplied for all years except 1999. This included a proxy for the size of the company (indicated by the “worker insurable earnings”) and an indication of the degree of hazard in that industry (“industry claim rate”).

Thus, for each subject with one or more WCB claims in Alberta between 1995 and 2004, we had information on the first claim that included sex and age, type of injury, type of accident, occupation, industry and, except for claims in 1999, some indication of company size and the hazard associated with being employed in that industry. These data were also known for any subsequent claim, but for this analysis only the date of any second claim was extracted: the outcome of interest was whether or not there had been a second claim and, if so, the period (in days) between the two claims.

Statistical methods

Following tabulation of each factor by the presence or not of a repeat claim and the time to a second claim if one occurred, a survival analysis, using a Cox proportional-hazards model, was carried out to estimate the effect of the various factors on time to the next claim, with censoring at the earlier of either December 31, 2004, or the 66th birthday. For the types of injury and accident associated with the first claim, the hazard ratio was calculated relative to the most frequently reported response. All analyses were performed in SPSS 14.0.

RESULTS

Of the 1,047,828 non-duplicate claims with a valid PHN there were only 490,230 individual claimants. Of these, 241,361 (49.2%) had at least one further claim, many with multiple claims and a maximum of 45 separate claims during the 10 years under review. Those with the first claim near the start of the 1995-2004 period were at risk for longer than those who entered the cohort later and, as expected, were more likely to have a second claim; two-thirds (67.6%) of those whose first claim was in 1995 had recorded a second claim by December 2004. Age and sex were also associated with having a second claim. In each age group, women were less likely than men to make such a second WCB claim (Table 1, section 1). Among men, those under 35 years of age were most at risk of a second claim, but for women this risk increased in the 35-44 years age group. The rates among both men and women in the oldest group will be biased in this cross-tabulation, which does not allow for the shorter risk period of those who reached 66 years before December 2004.

Information on the type of injury was present for 94.7% of the first claims; second claims were most frequent in those whose previous claim was for a surface wound or bruise and least likely in those for whom the first claim was a neoplasm (Table 2, section 1). Information on the type of accident was present for 70.0% of claims. Second claims were most frequent in those whose initial claim had been attributed to “contact with objects or equipment” and least frequent for transportation accidents and other events/exposures (Table 3, section 1).

A description of the occupation was available for 342,370 (69.8%) of first claims, and of industry sector for 236,215 (48.2%). The chance of a second claim varied quite markedly with occupation, the highest rates occurring in fishing/trapping (75% based on eight first claims, all male), machining trades (67.5%), food processing...
The analysis of second claims was taken further by considering the time to the second claim. On average, the second claim occurred slightly more than 2 years after the first (744 days; interquartile range 216-1,074). The mean time varied with each of the factors considered in Tables 1-5; the time between first and second claim is shown in the second section of each of these tables. Men had a shorter time to the second claim. For type of accident, in comparison with sprains, strains and tears (702 days) and for injuries that resulted from assaults and violent acts (731 days). People working as food processors, in machining trades and in materials handling all had mean repeat times of less than 700 days, mirrored in the short time by those in the manufacturing industry sector (672 days).

These factors were then considered together in a multivariate model in which the time to a second claim (if any) was the outcome variable. The survival analysis served to combine the data shown in sections 1 and 2 of Tables 1-5, those not having a second claim within the period of observation also contributing to the survival analysis. The analysis only included individuals with data on the four main factors (injury type, accident type, occupation and industry) that were present for 163,981 (33.5%) of the first claims. The results of the Cox regression are shown in sections 3 of Tables 1-5. They give reassurance that the earlier results were not substantially confounded. Men remained at higher risk in the multivariate model; a steadily decreasing risk with age now became apparent. For type of injury, in comparison with sprains, strains and tears, only surface wounds and bruises had a significantly shorter time to the second claim. For type of accident, in comparison with "contact with objects or equipment" none had a more

### Table 2. Relation of Injury Type to Second WCB Claim, Time to Second Claim (days) and Estimated Hazard Ratio (HR) from Cox Regression

<table>
<thead>
<tr>
<th>Injury Type</th>
<th>Number of First Claims</th>
<th>Number of Second Claim</th>
<th>Time to Second Claim, N=241,361</th>
<th>Cox Regression, N=163,981^†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>25,830</td>
<td>12,544</td>
<td>Mean 763 713 HR 1.06 CI 1.03-1.09</td>
<td></td>
</tr>
<tr>
<td>Sprains/strains/tears</td>
<td>160,431</td>
<td>79,585</td>
<td>Mean 745 682 HR 1.00 CI 0.99-1.01</td>
<td></td>
</tr>
<tr>
<td>Surface wounds</td>
<td>85,008</td>
<td>47,176</td>
<td>Mean 703 674 HR 1.00 CI 1.00-1.00</td>
<td></td>
</tr>
<tr>
<td>Fractures/dislocations</td>
<td>28,714</td>
<td>12,511</td>
<td>Mean 847 714 HR 0.73 CI 0.71-0.75</td>
<td></td>
</tr>
<tr>
<td>Open wounds</td>
<td>96,249</td>
<td>46,929</td>
<td>Mean 747 689 HR 0.84 CI 0.82-0.87</td>
<td></td>
</tr>
<tr>
<td>Burns</td>
<td>17,459</td>
<td>8,492</td>
<td>Mean 749 699 HR 0.80 CI 0.79-0.81</td>
<td></td>
</tr>
<tr>
<td>Traumatic injuries</td>
<td>37,177</td>
<td>16,508</td>
<td>Mean 702 652 HR 0.90 CI 0.88-0.93</td>
<td></td>
</tr>
<tr>
<td>Systemic diseases</td>
<td>30,856</td>
<td>13,527</td>
<td>Mean 782 711 HR 0.85 CI 0.82-0.87</td>
<td></td>
</tr>
<tr>
<td>Infectious parasitic</td>
<td>387</td>
<td>164</td>
<td>Mean 781 742 HR 0.82 CI 0.63-1.08</td>
<td></td>
</tr>
<tr>
<td>Neoplasms, tumours</td>
<td>109</td>
<td>8</td>
<td>Mean 905 571 HR 0.07 CI 0.05-0.10</td>
<td></td>
</tr>
<tr>
<td>Symptoms, signs, ill-defined conditions</td>
<td>2046</td>
<td>859</td>
<td>Mean 661 630 HR 0.94 CI 0.81-1.08</td>
<td></td>
</tr>
<tr>
<td>Multiple diseases</td>
<td>924</td>
<td>461</td>
<td>Mean 890 727 HR 0.81 CI 0.71-0.94</td>
<td></td>
</tr>
<tr>
<td>Other diseases/conditions</td>
<td>5040</td>
<td>2597</td>
<td>Mean 845 759 HR 1.03 CI 0.96-1.10</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>490,230</td>
<td>241,361</td>
<td>Mean 744 687 HR 1.00 CI 0.96-1.04</td>
<td></td>
</tr>
</tbody>
</table>

* Adjusted for sex, age, accident type, occupation and industry (see Tables 1, 3-5).
† CI=confidence intervals.

### Table 3. Relation of Accident Type to Second WCB Claim, Time to Second Claim (days) and Estimated Hazard Ratio (HR) from Cox Regression

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Number of First Claims</th>
<th>Number of Second Claim</th>
<th>Time to Second Claim, N=241,361</th>
<th>Cox Regression, N=163,981^†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>146,960</td>
<td>66,841</td>
<td>Mean 744 636 HR 1.00 CI 0.99-0.96</td>
<td></td>
</tr>
<tr>
<td>Contact w/objects or equipment</td>
<td>125,646</td>
<td>69,801</td>
<td>Mean 754 702 HR 1.00 CI 0.99-1.00</td>
<td></td>
</tr>
<tr>
<td>Bodily reaction/exertion</td>
<td>121,188</td>
<td>60,574</td>
<td>Mean 746 701 HR 0.94 CI 0.91-0.96</td>
<td></td>
</tr>
<tr>
<td>Falls</td>
<td>50,171</td>
<td>23,326</td>
<td>Mean 811 711 HR 0.88 CI 0.86-0.91</td>
<td></td>
</tr>
<tr>
<td>Exposure to harmful substances</td>
<td>24,745</td>
<td>11,978</td>
<td>Mean 776 724 HR 0.95 CI 0.90-1.00</td>
<td></td>
</tr>
<tr>
<td>Transportation accidents</td>
<td>15,290</td>
<td>5,925</td>
<td>Mean 827 697 HR 0.71 CI 0.68-0.74</td>
<td></td>
</tr>
<tr>
<td>Assaults/violent acts</td>
<td>24,745</td>
<td>11,978</td>
<td>Mean 776 724 HR 0.95 CI 0.90-1.00</td>
<td></td>
</tr>
<tr>
<td>Fires/explosions</td>
<td>5674</td>
<td>2688</td>
<td>Mean 731 690 HR 1.01 CI 0.95-0.98</td>
<td></td>
</tr>
<tr>
<td>Other events/exposures</td>
<td>547</td>
<td>225</td>
<td>Mean 840 677 HR 0.66 CI 0.55-0.81</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>490,230</td>
<td>214,361</td>
<td>Mean 767 687 HR 1.37 CI 0.34-5.50</td>
<td></td>
</tr>
</tbody>
</table>

* Adjusted for sex, age, accident type, occupation and industry (see Tables 1, 2, 4, 5).
† CI=confidence intervals.

(60.0%) and chemical processing (59.2%) (Table 4, section 1). Occupations with the highest rates of second claims were very similar for men and women. For men the four occupations with the highest rates were as in Table 4. Among women the highest rates were in machining and food processing, but the small group of women in mining had a higher rate than those in chemical processing. Differences among industry sectors were less marked than by occupation: those with above average rates were manufacturing, processing and packing (57.6%), transportation, communication and utilities (50.9%), and construction (50.8%) (Table 5). Among both men and women the highest rate of second claims was in manufacturing, but for women the next highest rate was in agriculture and for men in wholesale/retail.

Workers, women had a repeat claim time of 652 days, shorter than for men of the same age and indeed shorter than the time for women aged 18-24 years (671 days).

Time to a second claim was also associated with the type of injury and accident at the first claim. The shortest times were for surface wounds and other traumatic injuries (702 days) and for injuries that resulted from assaults and violent acts (731 days). People working as food processors, in machining trades and in materials handling all had mean repeat times of less than 700 days, mirrored in the short time by those in the manufacturing industry sector (672 days).

These factors were then considered together in a multivariate model in which the time to a second claim (if any) was the outcome variable. The survival analysis served to combine the data shown in sections 1 and 2 of Tables 1-5, those not having a second claim within the period of observation also contributing to the survival analysis. The analysis only included individuals with data on the four main factors (injury type, accident type, occupation and industry) that were present for 163,981 (33.5%) of the first claims.

The results of the Cox regression are shown in sections 3 of Tables 1-5. They give reassurance that the earlier results were not substantially confounded. Men remained at higher risk in the multivariate model; a steadily decreasing risk with age now became apparent. For type of injury, in comparison with sprains, strains and tears, only surface wounds and bruises had a significantly shorter time to the second claim. For type of accident, in comparison with “contact with objects or equipment” none had a more
SECOND WCB CLAIMS: WHO IS AT RISK?

Table 4. Relation of Occupation to Second WCB Claim, Time to Second Claim (days) and Estimated Hazard Ratio (HR) from Cox Regression

<table>
<thead>
<tr>
<th>Major Group</th>
<th>Number of First Claims</th>
<th>Second Claim</th>
<th>Time to Second Claim, N=241,361</th>
<th>Cox Regression, N=163,981</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Mean ± SD</td>
<td>HR ± 95% CI</td>
</tr>
<tr>
<td>Unknown</td>
<td>147,860</td>
<td>74,109</td>
<td>50.1</td>
<td>751 ± 690</td>
</tr>
<tr>
<td>Managers</td>
<td>5778</td>
<td>1235</td>
<td>21.4</td>
<td>770 ± 701</td>
</tr>
<tr>
<td>Natural science</td>
<td>4164</td>
<td>1408</td>
<td>33.8</td>
<td>811 ± 729</td>
</tr>
<tr>
<td>Social sciences</td>
<td>3625</td>
<td>1288</td>
<td>35.5</td>
<td>716 ± 699</td>
</tr>
<tr>
<td>Religion</td>
<td>34</td>
<td>10</td>
<td>29.4</td>
<td>834 ± 703</td>
</tr>
<tr>
<td>Teaching</td>
<td>2327</td>
<td>448</td>
<td>19.3</td>
<td>739 ± 708</td>
</tr>
<tr>
<td>Medicine/health</td>
<td>18,739</td>
<td>8096</td>
<td>43.2</td>
<td>822 ± 726</td>
</tr>
<tr>
<td>Artistic, literary</td>
<td>2004</td>
<td>679</td>
<td>33.9</td>
<td>821 ± 760</td>
</tr>
<tr>
<td>Clerical</td>
<td>28,236</td>
<td>11,605</td>
<td>41.1</td>
<td>761 ± 694</td>
</tr>
<tr>
<td>Sales</td>
<td>19,190</td>
<td>7249</td>
<td>37.8</td>
<td>774 ± 697</td>
</tr>
<tr>
<td>Services</td>
<td>54,840</td>
<td>24,842</td>
<td>45.3</td>
<td>781 ± 705</td>
</tr>
<tr>
<td>Farming</td>
<td>4235</td>
<td>1874</td>
<td>44.3</td>
<td>785 ± 701</td>
</tr>
<tr>
<td>Fishing/trapping</td>
<td>8</td>
<td>6</td>
<td>75.0</td>
<td>1507 ± 1226</td>
</tr>
<tr>
<td>Forestry/logging</td>
<td>1391</td>
<td>708</td>
<td>50.9</td>
<td>869 ± 725</td>
</tr>
<tr>
<td>Mining</td>
<td>9839</td>
<td>5450</td>
<td>55.4</td>
<td>774 ± 700</td>
</tr>
<tr>
<td>Processing</td>
<td>2331</td>
<td>1381</td>
<td>59.2</td>
<td>720 ± 699</td>
</tr>
<tr>
<td>Food/beverage</td>
<td>13,724</td>
<td>8228</td>
<td>60.0</td>
<td>642 ± 652</td>
</tr>
<tr>
<td>Machining</td>
<td>19,210</td>
<td>12,971</td>
<td>67.5</td>
<td>664 ± 647</td>
</tr>
<tr>
<td>Product fabrication</td>
<td>29,458</td>
<td>16,834</td>
<td>57.1</td>
<td>744 ± 680</td>
</tr>
<tr>
<td>Construction</td>
<td>41,997</td>
<td>22,475</td>
<td>53.5</td>
<td>753 ± 680</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>27,985</td>
<td>14,623</td>
<td>52.3</td>
<td>787 ± 706</td>
</tr>
<tr>
<td>Material handling</td>
<td>20,686</td>
<td>11,490</td>
<td>55.5</td>
<td>690 ± 671</td>
</tr>
<tr>
<td>Crafts/equipment operation</td>
<td>27,985</td>
<td>14,623</td>
<td>52.3</td>
<td>787 ± 706</td>
</tr>
<tr>
<td>Occupations not elsewhere classified</td>
<td>20,686</td>
<td>11,490</td>
<td>55.5</td>
<td>690 ± 671</td>
</tr>
<tr>
<td>Total</td>
<td>490,230</td>
<td>241,361</td>
<td>49.2</td>
<td>744 ± 687</td>
</tr>
</tbody>
</table>

* Adjusted for sex, age, accident type, occupation and industry (see Tables 1-3, 5).
† CI=confidence intervals.

DISCUSSION

Analysis of people with more than one WCB claim in Alberta within the 10-year window (1995-2004) identified a substantial proportion of second – and indeed multiple – claims. Careful inspection of the data and discussion with the Alberta WCB confirmed that these were indeed new incidents rather than a re-opening of the file for a further payment or intervention. Although in this study we cannot investigate the factors associated with a first claim (we do not have the denominators) the factors associated with a second claim appear similar to those shown, in reports from the WCBs, to be associated with all claims. They were more likely to occur in men, in younger workers and in occupations involving manual work. Second claims tended to be more frequent when the first accident was of a common type (being struck by an object, for example, or from a bodily reaction/exertion) consistent with hazards intrinsic to the job. The similarity between the occupations at high risk for men and women also supports the conclusion that the job itself, and not simply worker characteristics, played an important role in predicting risk. The type of injury associated with second claims less clearly mirrored the frequency in first claims: these were most commonly sprains, strains and tears, but second claims were more likely in those whose first claim had been for a surface wound.

The restriction of this analysis to those with a valid PHN and, for the Cox regression, to those with complete data is a limitation of the study. It introduces a potential for bias and reduces the extent to which the results can be extended to all WCB claimants in Alberta. The more serious, lost time, claims (28.4% of all claims in Alberta in 1999, the mid-point of our data) are probably more likely than claims not involving payments to have had information on all factors needed for the Cox regression. As such it is reassuring that the pattern of risk within factors is not different for this subset of claimants. It is not known whether patterns of second claims vary appreciably in different jurisdictions or how far the results reported here may apply elsewhere. Under-reporting of incidents is believed to be very considerable for WCBs across North America and may act as a considerable limitation in establishing the importance of factors associated with claims or the effectiveness of interventions.

Further studies of second claims would be strengthened if ways could be found to minimize (or quantify the effects of) underreporting and to ensure that computerized records of claims are complete. These studies would exclude from the “at risk” cohort those who did not return to work after their first injury. They should also aim to include information on remedial factors, such as workers’ training, and the safety culture and re-integration practices of the employer. Further, it would be important to record whether the company’s health and safety specialists, government health and safety inspectors or private consultants had intervened...
at the workplace after the initial claim and whether the worker changed tasks, jobs or employer between claims. A weakness of the current study is that we do not know whether the second claim took place with the same employer as the first.

The analyses included here suggest that there is still room for interventions to reduce the considerable differences between workers, jobs and industries in which claims occur. The initial claim should, and often may, trigger investigation and remediation of unsafe work practices and an assessment of ways in which an individual worker may benefit from training or workplace redesign suited to their needs. Although in no way do we advocate a return to the concept of "accident proneness”, discredited for many years in the prevention of occupational injury but still not entirely quiescent, interventions at the point of the first claim may reduce recurrences and thus the overall injury burden of the working population, in addition to keeping premiums low for responsible employers.

### References


### Table 5

<table>
<thead>
<tr>
<th>Number of First Claims</th>
<th>Second Claim</th>
<th>Time to Second Claim, N=241,361</th>
<th>Cox Regression, N=163,981*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Mean</td>
</tr>
<tr>
<td>Unknown</td>
<td>254,015</td>
<td>12,6097</td>
<td>49.6</td>
</tr>
<tr>
<td>Agriculture/forestry</td>
<td>2540</td>
<td>1187</td>
<td>46.7</td>
</tr>
<tr>
<td>Mining/petroleum</td>
<td>12,175</td>
<td>5759</td>
<td>47.3</td>
</tr>
<tr>
<td>Manufacturing/processing</td>
<td>45,592</td>
<td>26,278</td>
<td>57.6</td>
</tr>
<tr>
<td>Construction</td>
<td>38,545</td>
<td>19,586</td>
<td>50.8</td>
</tr>
<tr>
<td>Transportation</td>
<td>23,014</td>
<td>11,719</td>
<td>50.9</td>
</tr>
<tr>
<td>Wholesale/retail</td>
<td>43,281</td>
<td>20,517</td>
<td>47.4</td>
</tr>
<tr>
<td>Municipal government/education/health services</td>
<td>38,527</td>
<td>17,252</td>
<td>44.8</td>
</tr>
<tr>
<td>Provincial government</td>
<td>4898</td>
<td>1838</td>
<td>37.5</td>
</tr>
<tr>
<td>Business, personal/professional services</td>
<td>27,643</td>
<td>11,128</td>
<td>40.3</td>
</tr>
<tr>
<td>Total</td>
<td>490,230</td>
<td>241,361</td>
<td>49.2</td>
</tr>
</tbody>
</table>

* Adjusted for sex, age, accident type, occupation and industry (see Tables 1-4).
† CI=confidence intervals.
Examining Occupational Traumatic Brain Injury in Ontario

Angela Colantonio, PhD,1 David Mroczek, BA,1 Jigisha Patel, BSc,1 John Lewko, PhD,2 Jennifer Fergenbaum, PhD,1 Robert Brison, MD3

ABSTRACT

Objective: Occupational traumatic brain injuries disrupt the lives of workers and carry major economic repercussions. To date, there has been limited information on brain injuries that occur at work across injury severity levels in Canada. The aim of this study was to provide an overview of occupational traumatic brain injuries in Ontario, with a focus on the sex of the workers.

Methods: For this cross-sectional study, data from the Ontario Workplace Safety and Insurance Board were used. A retrospective chart review was conducted of over 1,500 claim files from the year 2004 with the diagnostic codes of concussion and intracranial injury. Severity was assessed according to data on days off work.

Results: The average age of those injured was 37.8 years. The breakdown by sex shows that 57.8% of claims for occupational traumatic brain injury involved males. The most common mechanism of injury was being “struck by or against”, followed by “falls”. Most of the occupational traumatic brain injuries were from the manufacturing, and government and related services sectors. The highest rate, however, was shown for transportation and storage (81.5/100,000), followed by government and related services (56.6/100,000) and primary industries (47/100,000).

Conclusions: An examination of occupational traumatic brain injuries across a range of severities reveals a profile that is different from that associated with more severely injured workers: there were many more women in particular industries who were injured and more injuries involving being struck by an object. This paper provides data on key industries, mechanisms and contributing factors involved in work-related traumatic brain injury that result in claims to the Workplace Safety and Insurance Board.

Key words: Traumatic brain injury; epidemiology; workplace

T raumatic brain injury (TBI) is a leading cause of death and disability worldwide. It is a very serious and often overlooked health care issue. Victims are often young, and survivors of TBI often live with devastating consequences, including temporary or permanent impairments, partial or total functional disability, psychosocial maladjustments and associated economic burdens.1 Even mild injuries can have long-term consequences.2 An examination of coroners’ files in Ontario showed that approximately half of all workplace fatalities involved a brain injury.3 In a study by Kim et al.4 based on severe injuries identified from the Ontario Trauma Registry, it was found that hospitalizations involving work-related traumatic brain injuries increased by 12.4% from 1993 to 2001. Information obtained from the Workplace Safety and Insurance Board (WSIB) of Ontario revealed that the number of occupational TBI claims has nearly doubled over a span of eight years.5 Previous studies have examined severe/fatal6,7 or mild cases separately.8 To date, no recent study has investigated occupational TBI across levels of severity. Because of the number of negative repercussions associated with occupational TBI and the apparent rise in its occurrence, a comprehensive examination of occupational TBI across levels of severity is needed in the Canadian context. Additionally, men continue to represent the majority of fatal and seriously injured,3,4 therefore we hypothesize that men will display a more detrimental profile of occupational TBIs than women. Thus the objectives of this study were to provide an overview of occupational TBIs that includes factors associated with the injury, the implication being that the results may assist in better targeting the prevention of work-related TBI, such as through sex-specific prevention.

METHODS

A case series design was used to examine all WSIB claims with an injury date in the year 2004 and categorized by the WSIB as either “intracranial injury” or “concussion”. All fatalities categorized as “traumatic” were also examined, for evidence of traumatic brain injury. The WSIB data are based on approximately 70% of the total Ontario workforce and were abstracted using a form that drew upon Haddon’s Matrix.7

In total, just over 1,500 non-fatal claim files were examined. Of those claims, 1,006 qualified as TBIs. Only claims with a confirmed...
diagnosis by a physician of “concussion”, “closed head injury”, “cerebral contusion” or “head injury with sequelae consistent with brain injury” were accepted for this study. A total of 94 “traumatic” fatality claims were also examined, 41 (44%) of which showed evidence of TBI as either a sole cause of death or as a contributing factor with other injuries. In total, there were 1,047 WSIB files that qualified for this study and that were examined in detail. Four major aspects of each claim file were examined when available, including Form 7, which is the employer’s account of the injury; Form 6, which is the worker’s account of the injury; Form 8, which is the physician’s first report; and medical documentation or memora nda that offered additional information.

Socio-demographic variables collected included age, sex, primary language, type of occupation and industry type. Injury characteristics collected were mechanism of injury, contributing factors and temporal factors. Outcome variables included lost time in days (e.g., days off work) as a surrogate of severity of injury and health care costs, which were obtained from an electronic data file from the WSIB. Claims were followed for one year after injury. Ten percent of fatal and non-fatal occupational TBI files were re-abstracted. Kappa statistics were conducted to assess for agreement between two abstractors. Excellent agreement (κ≥0.80) was found on core variables such as demographic variables and mechanisms of injury.

Statistical analysis involved generating frequency distributions for the total occupational TBI population and by sex, and calculating rates. Rates were calculated using, as the denominator, the number of males and females mandatorily insured in the Ontario labour force according to Standard Industrial Codes 1980 (SIC80), taken from the Labour Force Survey (LFS) 2000. Chi-square tests were conducted for categorical variables and t tests/Wilcoxon analyses for comparisons of continuous variables using SAS v 9.1 (Cary, NC). This study was approved by the research ethics board at the Toronto Rehabilitation Institute.

RESULTS

Table 1 shows the number of injuries and respective rates for both non-fatal and fatal occupational TBIs, by industry sector. The largest number of injuries occurred in manufacturing. The highest rates were shown for transportation and storage.

The overall breakdown by sex shows that 57.8% of occupational TBI claims involved males, whereas fatalities occurred almost exclusively among men. When sex and industry sectors were examined in detail, the largest proportion of women injured were working in the government and related services industry (66% of cases), followed by “other services” (48%). For non-fatal occupational TBIs, the average age of those injured was 37.8 years. Considering age and sex, females tended to be older than males, with an average age of 39.1 (standard deviation [SD]: 12.0) years and 37.2 (SD: 12.2) years respectively. By age and industry, workers in government and related services were the oldest (mean age: 41.6 years, SD: 11.5 years). Examining additional demographic data showed that, overall, most workers spoke English or French; however, 6% of seriously injured individuals did not, which was significantly higher than the proportion in the less severe groups (p<0.05).

For non-fatal occupational TBIs, the main injury mechanism of most injuries was categorized as struck by or against an object (Figure 1). These injuries were categorized as struck by an inanimate object (35%), struck against an inanimate object (25%) and struck against building structures (15%). These types of injury involved banging heads on stationary objects such as machinery or equipment and objects falling on heads, including objects that had been misplaced or poorly mounted. Falls from the same level accounted for 21% of injuries and falls from elevation 8.7%. The former occurred mostly among service professions, such as home care nurses, letter carriers, customer service representatives and certain types of drivers. Falls from elevation often involved general labourers and skilled trades persons. Compared with women, men were notably more likely to experience a motor vehicle crash, a trend that was similar but less marked for falls from an elevation. For a number of the remaining conditions, men and women equally shared similar

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**Table 1.** Rates of Injury (Concussion/Intracranial Injury) by Industry Sector (N=1,047)

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>Frequency*</th>
<th>Denominator†</th>
<th>Rate/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>84</td>
<td>26</td>
<td>110</td>
</tr>
<tr>
<td>Government and related</td>
<td>80</td>
<td>153</td>
<td>233</td>
</tr>
<tr>
<td>Other primary</td>
<td>30</td>
<td>12</td>
<td>42</td>
</tr>
<tr>
<td>Other services</td>
<td>79</td>
<td>73</td>
<td>152</td>
</tr>
<tr>
<td>Retail and wholesale trades</td>
<td>123</td>
<td>91</td>
<td>214</td>
</tr>
<tr>
<td>Construction</td>
<td>64</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>162</td>
<td>78</td>
<td>240</td>
</tr>
</tbody>
</table>

* Includes non-fatal and fatal occupational traumatic brain injuries.
† Denominators for Other primary include mining, forestry, fishing and trapping, and agricultural and related industries; Government and related additionally includes health and social service industries; Other services additionally includes finance and insurance, business service, and accommodation, food and beverage industries.
‡ Small cell size.
§ Not included to protect confidentiality.

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**Figure 1.** Distribution of injury mechanisms for occupational traumatic brain injury

- Struck by object
- Struck against object
- Struck against building
- Struck by person
- MVA
- Struck against person
- Caught or crushed
- Other
- Explosion

Frequency of injuries

- FFSL - Fall from the same level
- FFE - Fall from elevation

- Males
- Females

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mechanisms of injury. Older workers were most susceptible to being struck and to falling, whereas for younger workers the injury was more likely to be of a struck by/against type of mechanism (p<0.001).

The most common contributing risk factor was placement of objects in the working area (26.6%) and action or motion of the injured person (41.7%). Less common, with approximately 16% of injuries identified, were slippery conditions and the actions of other people (Table 2).

The seasonal and temporal trends for head injuries are shown in Figures 2 and 3 respectively. A higher number of injuries occurred in the winter months, and most injuries occurred mid to late morning (9:00-11:59 am).

The total number of days off work was 45,731.2, and men totalled more days off than women (29,648.9 vs. 16,082.3). Of the non-fatal occupational TBIs, 145 claims involved 60+ days off work. The seasonal and temporal trends for head injuries are shown in Figures 2 and 3 respectively. A higher number of injuries occurred in the winter months, and most injuries occurred mid to late morning (9:00-11:59 am).

The total number of days off work was 45,731.2, and men totalled more days off than women (29,648.9 vs. 16,082.3). Of the non-fatal occupational TBIs, 145 claims involved 60+ days off work. The average number of days lost for this study population was 46.0 (SD: 144.7) days, and the median number was 3.5 days, indicating a tendency for fewer days off work. How-

Table 2. Contributing Factors for Occupational Traumatic Brain Injury (N=1,047)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather conditions</td>
<td>57 (5.7)</td>
</tr>
<tr>
<td>Slippery terrain</td>
<td>61 (6.1)</td>
</tr>
<tr>
<td>Slippery non-terrain</td>
<td>95 (9.4)</td>
</tr>
<tr>
<td>Other non-terrain</td>
<td>22 (2.2)</td>
</tr>
<tr>
<td>Placement of objects in working area</td>
<td>268 (26.6)</td>
</tr>
<tr>
<td>Change in elevation</td>
<td>31 (3.1)</td>
</tr>
<tr>
<td>Working overhead</td>
<td>47 (4.7)</td>
</tr>
<tr>
<td>Working in an elevated area</td>
<td>35 (3.5)</td>
</tr>
<tr>
<td>Working in a tight spot</td>
<td>129 (12.8)</td>
</tr>
<tr>
<td>Machinery, vehicle or tool malfunction</td>
<td>74 (7.4)</td>
</tr>
<tr>
<td>Time pressure</td>
<td>10 (1.0)</td>
</tr>
<tr>
<td>Actions of other people</td>
<td>165 (16.4)</td>
</tr>
<tr>
<td>Action of injured person</td>
<td>419 (41.7)</td>
</tr>
<tr>
<td>Other</td>
<td>128 (12.7)</td>
</tr>
</tbody>
</table>

DISCUSSION

Occupational TBIs are a far-reaching problem that affects all industry sectors and demographic categories. This study provides a profile of occupational TBI in Ontario based on claims data to the Ontario WSIB, indicating industries with the highest number of occupational TBIs as well as the highest rates, and also providing information by age and sex. While only a small percentage of occupational TBIs contribute a major layoff and extremely high claim costs, hundreds of more minor injuries with 1 to 59 days lost add up to a formidable amount of overall working time lost, high health care costs and a disruption in the lives of workers.

This study is the only Canadian study to examine occupational TBIs for a range of severity levels, as indicated by days off work. It showed that by including all levels of severity, there was an equally high number of women affected by occupational TBIs in particular industries, a finding that might inform sex-specific prevention strategies. Women tend to be underrepresented in occupational TBI studies. However, they have unique post-injury signs and symptoms related to endocrine functions that warrant additional study and a focus on sex-specific workplace prevention strategies. Previ-

ou-

s studies on more serious injuries were almost exclusively composed of males, whereas in this study females were well represented and their occupational TBIs included a range of severity.

Our findings on rates of injury by sector showed that workers in transportation and storage are most at risk of brain injury, followed by government and related services, and other primary industries. Our findings are different from those of previous studies on occupational TBI because of the inclusion of a range of severity levels in the study, whereas previous studies included severe hospitalizations or fatalities and showed other/primary industry as the sector with the highest rates. The relative ranking of industries involved in terms of occupational TBI in our study is most similar to that of Kristman et al. as a result of the inclusion of less severe occupational TBIs in general, although we used a less broad definition of TBI and did not restrict our population to only mild TBIs. We also see that age plays a role in terms of injury mechanisms, whereby older workers are more at risk of falls. Our results are consistent with work previously done on more seriously injured work-
ers. Our study, which includes many mild injuries, however, captures some of the injuries that most affect women.

Our study is one of the few that has examined the seasonal and temporal characteristics of injuries, and it showed peak instances of injury, which is very important information in a Canadian context. The study suggests how injury prevention strategies might take into account the variations of our weather, which likely influence injuries in the winter months perhaps during a work transition period. However, we recognize that this trend needs to be studied further by type of occupation and industry sector, as variations exist depending on the type of work involved." The study also indicates the need for good data on etiology that are specific to Canada. In addition, our data suggest that older workers versus younger workers may be more vulnerable to injury later in the day, possibly indicating the role of fatigue in injury. The occurrence of occupational TBI by age requires a closer examination. More consistent results across studies may be revealed once time of injury is taken into account.

In order to examine the scope of occupational TBI, a large population of this injury type is needed for examination. The Ontario WSIB offers coverage to roughly 70% of the workforce and is perhaps the best source of data for an epidemiological study of occupational TBI across severity levels. Files from the Office of the Chief Coroner in Ontario would provide more complete coverage of workplace fatalities in Ontario. ICD-10 coding used by hospitals more recently identifies emergency department visits and hospitalizations associated with workplace injuries and should also be examined; however, this would not capture persons who may have visited family physicians only.

For prevention-oriented studies such as this one, forms used for administrative purposes have the potential to be an excellent source of information, as it is easy to abstract and analyze data from them. The forms used for this study were Form 6, Form 7 and Form 8. Form 6 was only sparsely included in this set of files, many files relying solely on the report of the employer for a description of the injury. Form 7 was found to be included consistently and was the most reliable and most descriptive of all sources. This form typically included demographic information about the injured worker, as well as job- and injury-related information. While the overall quality of the data abstracted from this form was high, many forms were found to be incomplete despite legal requirements to complete the form in full. For cases in which information that should have been on file was missing or incomplete, memoranda were consulted in order to locate missing variables. Form 8 was supposed to be the first medical information on file. Before making a claim with the WSIB, one is required to have a Form 8 completed by a physician. Many files, however, were observed to have Form 8 missing. In addition to this, while most were properly completed, a sizeable number were incomplete. Often the form had an absolute minimum level of information. Past medical history was one of the variables found to be unreliable in this study, only a small percentage showing this information. The WSIB could greatly increase their ability to work towards epidemiological prevention efforts by better enforcing proper completion of forms on file or through ongoing training of personnel on form completion.

The WSIB codes head injuries as a priority over all other injury types. For instance, if a worker suffers both a TBI and a broken arm, the claim will be coded as a head injury. This study used only claims coded as either “concussion” or “intracranial injury”. Our estimates are likely conservative because we did not examine all files with other codes that might reveal a TBI, e.g., multiple trauma. Of the 1,503 files examined, only 1,006 qualified under the criteria used for inclusion in this study. Some claims had to be excluded because of lack of a positive medical diagnosis, but there were many that were simply miscoded. This was not formally recorded, but it was observed during the abstraction process that there was a fairly sizeable population of claims with a diagnosis of musculoskeletal injury type. Fatality claims were coded as either “traumatic” or “disease”. It should be noted, however, that we did not examine a wide range of codes to see how many TBIs might have been captured under non-TBI diagnoses. We did not examine the multiple injury codes, which may have included TBI as well. Therefore, we believe that our estimates of TBI are conservative, as they pertain to only the two TBI codes examined.

This study addresses the dearth of data on occupational TBIs in Canada. It shows which sectors are most affected by this injury and provides information on mechanisms of injury. It also highlights the extent of lost time, indicating which industries have the longest days off work. Brain injuries can result in many days off work. Although many studies have focused on return to work after brain injury, there are virtually no peer-reviewed publications on the experience of returning to work after having an occupational brain injury in civilian populations. An examination of the facilitators and barriers of return to work after occupational brain injury is an important area for future research, which was beyond the scope of this paper. A previous brain injury is a risk factor for subsequent injury overall, but the extent to which this is true for occupational brain injury needs to be investigated. It is not known to what extent, for instance, workers/employers are trained to manage concussions in order to prevent further injury, as is occurring in other areas, such as the world of sports. These studies should include even mild injuries, as a subset of mild injuries can have persistent post-injury signs and symptoms that can worsen if the right steps are not taken to prevent further damage.

From our study, we advocate better reporting of the nature and circumstances of injuries so that the information can be used for prevention purposes. For future research, we recommend more detailed analyses of injuries as they occur across industries, with a focus on women. Future analyses should take into account the role of age in relation to mechanisms of injury and also temporal characteristics.

REFERENCES

OCCUPATIONAL TRAUMATIC BRAIN INJURY


RÉSUMÉ

**Objectif** : Les traumatismes cérébraux au travail désorganisent la vie des travailleurs et ont d’importantes répercussions économiques. Jusqu’à maintenant, on a peu d’information sur les niveaux de gravité des blessures cérébrales qui se produisent au travail au Canada. L’objectif de cette étude était d’en donner un aperçu pour l’Ontario, selon le genre des travailleurs accidentés.


**Résultats** : L’âge moyen des personnes atteintes était de 37,8 ans. Réparties selon le sexe, 57,8 % des demandes d’indemnisation pour traumatisme cérébral avaient été déposées par des hommes. Les mécanismes de blessure les plus courants étaient d’avoir été « frappé par ou contre » quelque chose et d’avoir fait une « chute ». La plupart des traumatismes cérébraux au travail provenaient des secteurs manufacturier, gouvernemental et des services connexes. Le taux le plus élevé était par contre observé dans le secteur des transports et de l’entreposage (81,5/100 000), suivi des services gouvernementaux et services connexes (56,6/100 000) et des industries primaires (47/100 000).

**Conclusion** : Un examen des traumatismes cérébraux au travail selon l’étendue de la gravité dessine un portrait différent de celui associé uniquement aux travailleurs grièvement blessés : dans certaines industries, beaucoup plus de femmes que d’hommes avaient subi des lésions, et davantage de travailleurs accidentés avaient été frappés par un objet. Nous présentons nos données par grands secteurs d’activité, selon les mécanismes de blessure et selon les facteurs ayant contribué à des traumatismes cérébraux au travail entraînant des demandes d’indemnisation auprès de la Commission.

**Mots clés** : traumatismes cérébraux; épidémiologie; milieu de travail
Quel est le rôle du travail dans l’incidence de la consommation de médicaments psychotropes au Canada?

Marie-Eve Blanc, Ph.D.¹, Alain Marchand, Ph.D.²

RÉSUMÉ

Objectifs : Cette étude a pour objectif d’examiner la contribution du travail et d’autres déterminants sociaux dans l’incidence de la consommation de médicaments psychotropes chez les travailleurs et travailleuses, sur une période de 8 ans.


Résultats : L’incidence de la consommation de médicaments psychotropes est estimée à 3,5 % sur la période de 8 ans. À l’exception des heures travaillées, la profession et les autres caractéristiques du travail ne montrent pas de contribution significative. Par contre, le fait d’être une femme, l’âge, la santé physique, le tabagisme et les événements stressants dans l’enfance augmentent le risque de consommer des médicaments psychotropes, alors que certains traits de personnalité en diminuent l’incidence.

Conclusions : Les expositions au travail, telles que mesurées par l’ENSP, jouent un rôle limité sur le développement de la consommation de médicaments psychotropes. D’autres recherches sont nécessaires afin de mieux saisir comment se profile cette consommation au fil du temps chez les travailleurs.

Mots clés : médicaments psychotropes; profession; conditions de l’organisation du travail; facteurs hors-travail; facteurs individuels; études longitudinales; analyse multiniveaux

The translation of the Abstract appears at the end of this article.
temps partiel²³. Aussi, le fait de vivre seul ou divorcé⁴,⁻⁷,⁻⁹,²⁴, ainsi qu’un faible soutien social hors travail⁶ augmenteraient le risque de consommer des médicaments.

Quant aux caractéristiques individuelles, quelques études ont montré que le genre féminin était associé à la consommation de médicaments psychotropes⁶,⁻¹⁴,²¹,²². L’âge serait aussi associé positivement avec l’usage de médicaments psychotropes chez les travailleurs⁶,⁻⁷,⁻¹³,²². Quant aux traits de personnalité, seul le centre du contrôle serait associé négativement à la consommation de psychotropes⁶. Le centre du contrôle est l’ampleur avec laquelle l’individu considère que les choses de la vie sont sous son propre contrôle plutôt qu’attribuées à la fatalité ou aux autres. Les personnes qui en seraient doté pourraient mieux faire face au stress et avoir moins recours aux médicaments psychotropes. Également, des événements stressants dans les 12 derniers mois seraient un facteur aggravant de la consommation de médicaments psychotropes¹⁵. Le fait d’être un fumeur¹⁴,²² ou avoir un style de vie sédentaire étaient aussi associé à une plus forte consommation de psychotropes chez les travailleurs¹³.

En somme, l’état des connaissances fait ressortir l’influence du stress au travail sur la consommation de psychotropes, mais les limites des études relatives aux échantillons et aux devis des enquêtes justifient des efforts supplémentaires de recherche pour bien saisir les articulations complexes entre le travail, la famille, le réseau social, la communauté locale et les caractéristiques personnelles qui favorisent le développement de la consommation de médicaments psychotropes chez les personnes en emploi.

Cette étude a pour objectif d’évaluer la contribution du travail sur le développement de la consommation de médicaments psychotropes dans la main-d’œuvre canadienne, en ajustant pour les caractéristiques de la personne, de la famille, du réseau social et de la communauté locale.

**MÉTHODES**

Nous avons utilisé les données des cinq premiers cycles (cycle 1=1994-1995, cycle 5=2002-2003) de l’Enquête nationale sur la santé de la population (ENSP) de Statistique Canada. L’ENSP fournit des données longitudinales sur un large pan de la population canadienne suivie tous les deux ans depuis 1994-1995 et comporte 17 276 individus. Le taux de réponse varie selon les cycles de 80,6 à 93,6 %. Nous avons sélectionné pour notre étude un panel composé de 1 347 communautés locales ne décomptant pas de médicaments psychotropes au cycle 1 et ont consommé au cours du dernier mois⁵. Pour la consommation de psychotropes au cours des deux derniers jours ou au cours du dernier mois⁴. Pour la consommation de psychotropes au cours des deux derniers jours, la classification anatomo-therapeutique et chimique (ATC) de l’Organisation mondiale de la santé (OMS)²⁶ a été utilisée : anxiolytiques, hypnotiques et sédatifs, antidépresseurs, psychostimulants, psycholeptiques, psychoanalytiques. Pour le dernier mois, l’ENSP documente la consommation de tranquillisants, d’antidépresseurs et/ou de somnifères. La consommation de médicaments psychotropes est codée 1 pour les répondants ayant consommé, soit au cours des deux derniers jours, soit au cours du dernier mois; et codée 0 pour les personnes n’ayant pas consommé.

Pour la profession, nous avons utilisé la variable de profession en 47 catégories dérivée de la Classification Type des Professions à quatre codes (CTP-91) de Statistique Canada qui comporte 139 professions. Ensuite nous avons regroupé les 47 professions en 6 catégories (cadres supérieurs, par exemple cadre supérieur de l’administration publique; directeurs, par exemple directeur des ressources humaines; superviseurs, par exemple surveillant dans la fabrication automobile; professionnels, par exemple vérificateur comptable; cols blancs, par exemple commis de soutien administratif; et cols bleus, par exemple manutentionnaire). Les variables du travail étaient mesurées au moyen de questions adaptées du Job Content Questionnaire (JCQ) de Karasek²⁶, incluant l’utilisation des compétences (3 items, α=0,53), la latitude décisionnelle (2 items, α=0,65), les demandes psychologiques (2 items, α=0,35), les demandes physiques (1 item), le soutien social au travail (3 items, α=0,42) et l’insécurité au travail (1 item). Le détail des questions du JCQ est présenté à l’annexe 1. La fiabilité de ces échelles calculée sur des mesures répétées variaient entre 0,68 et 0,86, ce qui indique une stabilité des concepts dans le temps²⁷. Parmi les variables du travail, étaient mesurées les heures travaillées, c’est-à-dire le nombre total d’heures travaillées dans l’emploi principal et dans les autres emplois, ainsi que l’horaire de travail irrégulier (0=horaire normal de jour, 1=horaire de soir, de nuit, rotatif, brisé, sur appel et autre). La dichotomisation de cette dernière variable est justifiée par le fait que les atteintes à la santé mentale (détresse psychologique et dépression) sont plus importantes sur des horaires de travail irrégulier autant chez les hommes que chez les femmes²⁸⁻³¹.

Les variables de la famille incluaient le statut marital (1=couple, 0=autres); le statut parental selon les groupes d’âge des enfants (0-5 ans, 6-11 ans, 12-24 ans); le revenu du ménage classé en 5 rangs de suffisance économique établi par Statistique Canada; les tensions avec le conjoint (3 items, vrai-faux au sujet de la compréhension, de l’affectation et de l’engagement du conjoint) et les tensions avec les enfants (2 items, vrai-faux au sujet d’un enfant malheureux et d’un enfant source de problèmes) de Wheaton³².

Le réseau social était mesuré à l’aide d’une échelle du soutien social en 4 items (un soutien en cas de crise, un soutien affectif, un confident, un soutien qui suggère des solutions). Chaque item est codé de 1 (jamais) à 5 (toujours), puis dichotomisé : 1=parfois, la plupart du temps et tout le temps; 0=jamais et rarement. Ensuite on a fait la somme des items et l’a dichotomisée (1=4, soit soutien élevé; 0=0 à 3, soit soutien faible).

Les caractéristiques individuelles étaient mesurées par le genre (0=homme, 1=femme); l’âge (en années); l’état de santé physique mesuré par le nombre de problèmes de santé physique; l’estime de soi en 6 items de Rosenberg²⁶; le centre du contrôle en 7 items de Pearlin et Schooler²⁴, le sentiment de cohésion en 13 items d’Antonovsky³⁵, qui fait référence au sentiment que les événements de la vie ont un sens et sont compréhensibles, gérables et signifiants pour l’individu; l’usage du tabac (nombre de cigarettes fumées par semaine); l’activité physique (nombre de séquence ≥15 minutes par mois) et les événements stressants dans l’enfance en 7 items de Wheaton³². Enfin, la communauté locale était mesurée par le secteur de recensement (SR) en zones urbaines et par la subdivision de recensement (SDR) en zones rurales. Les SR sont de petites unités
LE TRAVAIL ET LA CONSOMMATION DE MÉDICAMENTS PSYCHOTROPES

Tableau 1. Statistiques descriptives de l’échantillon sélectionné au cycle 1 (1994-1995), n=7 020

<table>
<thead>
<tr>
<th>Professions</th>
<th>Min. - Max.</th>
<th>Moyenne/ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadres supérieurs</td>
<td>0-1</td>
<td>0,42 %</td>
</tr>
<tr>
<td>Directeurs</td>
<td>0-1</td>
<td>7,35 %</td>
</tr>
<tr>
<td>Superviseurs</td>
<td>0-1</td>
<td>4,36 %</td>
</tr>
<tr>
<td>Professionnels</td>
<td>0-1</td>
<td>15,49 %</td>
</tr>
<tr>
<td>Cols blancs</td>
<td>0-1</td>
<td>48,50 %</td>
</tr>
<tr>
<td>Cols bleus</td>
<td>0-1</td>
<td>23,88 %</td>
</tr>
</tbody>
</table>

Le tableau 2 présente les résultats des analyses multiniveaux une fois introduites les variables indépendantes. Le modèle 2 montre que le risque de commencer à consommer des médicaments psychotropes chez les travailleurs au bout de 8 ans s’était à 3,5 % (IC 95%=[3,2 %;3,9 %]). De plus, le logit de l’apparition d’une première consommation de médicaments psychotropes varie significativement entre les communautés locales. La corrélation intraclasse a été estimée à 0,146, ce qui signifie que 14,6 % de la variation de l’incidence de la consommation de médicaments psychotropes se trouve entre les communautés locales.

Le tableau 2 présente les résultats des analyses multiniveaux une fois introduites les variables indépendantes. Le modèle 2 montre que le risque de commencer à consommer des médicaments psychotropes chez les travailleurs ne varie pas significativement au fil du temps.

Le modèle 3 présente les effets de la profession et des caractéristiques du travail et montre que seulement les demandes psychologiques, le soutien social et les heures travaillées sont significatifs. Les modèles 4 et 5 contrôlent pour la famille et le réseau social; seul le soutien social au travail n’est pas significatif lorsqu’on ajoute les variables de la famille, mais l’est de nouveau lorsqu’on ajoute seulement le soutien social hors travail. Le modèle 6 contrôle pour les caractéristiques de l’individu qui contribuent à faire disparaître les effets significatifs des variables du travail. Le modèle 7, modèle final, tient compte de toutes les variables et montre que seules les heures travaillées sont encore significatives. Également, il ne reste plus aucun effet des variables hors-travail (famille et réseau social) puisque les tensions avec le conjoint et le soutien social hors travail ne sont plus significatifs en comparaison avec les modèles 4 et 5. Cependant toutes les variables de l’individu reliées au genre, à l’âge, à l’état de santé physique, au centre du contrôle, au sentiment de cohésion, au fait de fumer et aux événements stressants dans l’enfance maintiennent leurs contributions au modèle final comme au modèle 6. De plus, le risque de débuter une consommation de médicaments psychotropes continue encore à varier entre les communautés locales, puisque la variation a même augmenté et se situe à 17,4 %.

Enfin, les interactions pour le genre ont été testées, mais aucune n’a été trouvée significative. Les résultats donnent $\chi^2=4,69$, $df=5$, $p=0,45$ pour la profession et $\chi^2=4,82$, $df=8$, $p=0,78$ pour les conditions de l’organisation du travail.

**DISCUSSION**

Sur une période de 8 ans, l’incidence de la consommation de médicaments psychotropes est relativement faible (3,5 %), et ne semble pas varier significativement dans le temps. Ce résultat peut s’expliquer par le fait qu’avec le temps passé sur le marché du travail, les conditions de vie des individus ont plutôt tendance à s’améliorer, produisant une diminution de la détresse psychologique par exemple$^6$. D’autres études ont d’ailleurs observé à travers le temps soit une diminution de la consommation$^{14}$, soit une stabilisation ou une légère augmentation dépendamment du type de médicaments psychotropes$^{26}$. Dans notre étude, nous n’avons pas différencié les types de médicaments psychotropes et une étude selon le type de médicaments psychotropes apporterait des précisions sur le développement d’une nouvelle consommation.

La profession n’a pas montré de contribution significative, ce qui peut s’expliquer par la multiplicité des variables individuelles prise en compte dans le modèle final. Par ailleurs, les catégories professionnelles (de 2 500 à 8 000 habitants), dont les caractéristiques socioéconomiques sont homogènes. Les SDR correspondent aux petites villes et municipalités.

Au plan des analyses, les données ont une structure hiérarchique dans laquelle les travailleurs (niveau 1) sont nichés dans les communautés (niveau 2). Des modèles multiniveaux de régression de survie à temps discret$^{26}$ ont été estimés avec le logiciel MLwiN, version 2.02$^{49}$. Cette méthode permettait de tenir compte des effets de plan de l’ENSP et d’évaluer le pourcentage de la variance entre les communautés, ainsi que d’estimer les contributions de la profession, des conditions de l’organisation du travail, de la situation familiale, du réseau social hors travail et des caractéristiques individuelles. Nous avons également testé les effets d’interaction du genre avec la profession et les conditions de travail séparément.

RÉSULTATS

Le tableau 1 présente les statistiques descriptives de l’échantillon au cycle 1.

Un premier modèle de régression logistique multiniveaux permet d’estimer l’incidence de la consommation de médicaments psychotropes. En prenant l’antilog de la constante (modèle de base sans les variables indépendantes), le risque moyen de commencer à consommer des médicaments psychotropes chez les travailleurs au bout de 8 ans s’était à 3,5 % (IC 95%=[3,2 %;3,9 %]). De plus, le logit de l’apparition d’une première consommation de médicaments psychotropes varie significativement entre les communautés locales. La corrélation intraclasse a été estimée à 0,146, ce qui signifie que 14,6 % de la variation de l’incidence de la consommation de médicaments psychotropes se trouve entre les communautés locales.
sionnelles regroupent plusieurs professions, ce qui a pour effet d’élimer les variations de la consommation à l’intérieur de ces groupes. Cependant, sur le plan des conditions de l’organisation du travail, seules les heures travaillées favorisent une diminution du risque de débuter une consommation de médicaments psychotropes – ce qui pourrait signifier qu’un travail à temps plein présente plus de risque de débuter une consommation de médicaments psycho-tropes que de travailler à temps partiel. Cependant, nos résultats sont en accord avec ceux de plusieurs études qui ont aussi mis en évidence l’effet de l’emploi à temps partiel sur la consommation de médicaments psychotropes. Les chercheurs sont d’accord sur le fait que le travail et la famille sont intimement liés au contexte des communautés dans lesquelles ils se situent. Les communautés représentent des espaces et des réseaux sociaux dans lesquels le travailleur peut puiser des ressources (exemples : services de garde, transports en commun, etc.), mais peut aussi en subir des contraintes (exemples : délits, pollution, etc.). Quelques chercheurs se sont essayés à tester les variables du travail avec le lieu de vie du travailleur et il semble que les caractéristiques de la communauté locale ont une influence sur le niveau de stress de ce dernier. Par ailleurs, le fait d’être une femme et d’être plus âgé, d’avoir un faible état de santé physique, un centre de contrôle externe, un faible sentiment de cohésion, le tabagisme et les événements stressants dans l’enfance jouent un rôle plus crucial et déterminant dans la survenue d’une consom-mation de médicaments psychotropes.

Au-delà du travail, les résultats soulèvent un rôle important des facteurs hors-travail et individuels. Ainsi, l’incidence de la consom-mation de médicaments psychotropes varie aussi entre les com-munautés locales, ce qui ouvre une nouvelle avenue de recherche pour le futur. En effet, il y a très peu d’études qui mettent en relation les facteurs du travail et ceux de l’environnement plus large du travailleur et de sa famille. Pourtant, cet environnement a beaucoup changé ces dernières années avec l’avènement de la société des loisirs et les structures de la famille qui ne sont plus les mêmes; par exemple, une famille, parfois recomposée, dont les adultes-travailleurs s’occupent d’enfants sans avoir de liens de sang avec eux. Les chercheurs sont d’accord sur le fait que le travail et la familial.
bonne validité41. Aussi, une consistance interne modérée de la version française de l’ESSP introduisent un degré d’erreur dans l’estimation des variations temporelles de la consommation de médicaments psychotropes. Enfin, l’ENSP n’a pas de compte des facteurs du travail liés à l’environnement physique (le bruit, la poussière, les conditions climatiques, etc.), des styles de gestion et de supervision, ni des ressources disponibles en santé et en sécurité au travail. Enfin, cette étude analyse le développement d’un seul épisode de consommation de médicaments psychotropes assumant que la personne ne consommait pas au cycle 1. Or, la consommation de tels médicaments n’est assurément pas un événement unique et pourrait se répéter dans le temps avec des intervalles d’absence de consommation. Ce faisant, d’autres études sont nécessaires pour comprendre comment se profile la consommation de médicaments psychotropes au fil du temps et d’examiner comment le travail s’y associe.

Malgré ces limites, les données de l’ENSP semblent suggérer une contribution plutôt limitée du travail sur le développement de la consommation de médicaments psychotropes sur une période de 8 ans. Toutefois, les caractéristiques individuelles semblent expliquer davantage le développement de cette consommation. Par conséquent, d’autres recherches sont nécessaires afin de mieux saisir les patrons de cette consommation qui se tissent au fil du temps chez les travailleurs.

RÉFÉRENCES

ABSTRACT

Objectives: This study aims to examine the contribution of work and other social determinants to the onset of psychotropic drug use among workers over an 8-year period.

Methods: The study is based on a secondary analysis of the longitudinal data of the National Population Health Survey (NPHS) of Statistics Canada carried out between 1994-1995 and 2002-2003. A panel of 7,338 people aged 15 to 55 and employed at cycle 1 was selected. To establish the incidence rate, we included those participants identified at cycle 1 as not using psychotropic drugs. Overall, 7,020 people in 1,347 local communities did not use psychotropic drugs at cycle 1 and constituted the group at risk in the study. Discrete time survival multilevel regression models were used.

Results: The onset of psychotropic drug use was estimated at 3.5% over the 8-year period studied. With the exception of the number of hours worked, occupations and other work characteristics measured in the NPHS do not show a significant contribution. Being a woman, age, physical health, smoking and stressful childhood events support an increased risk of psychotropic drug use, whereas certain personality traits decreased the risk of psychotropic drug use.

Conclusions: The work factors measured in the NPHS seem to play a limited role in the incidence of psychotropic drug use. More research is needed to better capture patterns of workers’ psychotropic drug use over time.

Key words: Psychotropic drugs; occupation; organizational work conditions; non-work factors; individual factors; longitudinal studies; multilevel analysis