

Improving the Health and Safety of Community Health Workers

A project in partnership with:

Delta Home Support Services Society
North Shore and Coast Garibaldi Home and Community Care
Powell River and District Home Support Society
Richmond Community Home Support
South Fraser Home Support
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Executive Summary

Background

The success of changes in health care delivery has allowed more people to maintain independence and self-sufficiency in their own homes for as long as possible. However, providing assistance with activities of daily living within a person's home presents special health and safety challenges for Community Health Workers (CHWs). Since the workplace of the CHW is primarily the clients' homes, imposing occupational health and safety measures to eliminate or reduce worker exposure to these hazards becomes more challenging. Therefore, this study was undertaken to evaluate various interventions as effective measures for reducing the risks in this environment.

In 2000 the Workers' Compensation Board (WCB) injury rates for Social Service Workers and Domestic Workers, groups that include CHWs, were 7% to 30% higher than that for other healthcare workers, and 65% to 100% higher than the average for all other workers in British Columbia (BC). However, there have been few studies that provide information on injury rates, mechanisms of injury, predictors of injury, or effective risk management strategies among CHWs specifically.

Methods

In 2000, the Occupational Health and Safety Agency for Healthcare (OHSAH) sponsored a workshop in which union and management stakeholders developed three interventions aimed at reducing injuries among CHWs. These consisted of training sessions for CHWs, the use of a risk assessment tool by a homecare agency supervisor to help identify and mitigate the risks to staff prior to the visit, and access to mechanical lifting equipment. To evaluate the effectiveness of the interventions, five home support agencies, from 2002 through to early 2005, adopted one or more of the interventions while one agency participated as a control group. A questionnaire was used to collect information related to staff perception of their job, as well as demographic and employment information. The original intent was to ascertain the impact of each of the components separately; however, restructuring of agencies, and difficulties in implementation of the interventions as designed, particularly the mechanical lifts, precluded the evaluation of the interventions separately.

Results

Analysis of injury data showed the following:

- Over the three years prior to enrollment in the study, 39% of the participants reported at least one injury and 24% of the participants had at least one accepted Workers' Compensation Board (WCB) claim.
- Overexertion and falls were the main source of WCB time-loss claims pre-intervention, accounting for 60% and 30%, respectively, followed by exposures (5%), violence (4%), and allergic reactions (1%). A similar pattern was observed in the WCB time-loss claims post intervention: overexertion (57%), falls (29%), and exposures (3%) - except for violence, which accounted for 11% of all time-loss claims.
- CHWs who had reported a workplace injury in the three years before the study were more likely to report a workplace injury that resulted in an accepted WCB claim during the year of the study.

- The intervention groups were more likely to report a workplace injury as compared to the control group.
- The intervention groups had fewer WCB accepted claims and time-loss injuries compared to the control group.
- Those who felt safer on the job, reported higher job satisfaction, or reported lower pain and discomfort levels on the baseline questionnaire were significantly less likely to sustain a workplace injury or have a WCB claim.

Conclusions

The results of this study showed that the injury rates in CHW were higher than reported rates for other healthcare related occupations, and that the most common mechanisms for injury were overexertion and falls, followed by exposures, violence, and allergic reactions.

The following interventions examined in this study effectively reduced injuries in the participating CHWs:

- The provision of appropriate education and training to increase the awareness of the risk management process and promote the implementation of practical controls in a timely fashion.
- The use of a risk assessment tool and resource guide to facilitate comprehensive evaluation of the work environment and guide the implementation of practical control measures before a CHW cares for a client in the home care environment.

The interventions examined appear to have been associated with a culture of increased reporting. The increased reporting, however, was not associated with increased number of time loss claims.

Results demonstrated, in a prospective fashion, that enhanced CHW perception of health, safety, and job satisfaction, could have a protective effect in reducing injuries and claims.

Violence seems to be an increasingly important mechanism of injury. While the number of incidents were small (only 3 violence related time-loss claims after the intervention was implemented compared to 1.3 per year in the three previous years), we recommend that more attention be paid specifically to this area in the future. The suggestion in the literature that specific training be implemented in this regard may well be worth trialing.

More investigation is needed as to why the mechanical lifting equipment was not well-received, including measures to address any barriers identified.

Table of Contents

Acknowledgements.....	i
Executive Summary.....	ii
<i>Background</i>	ii
<i>Methods</i>	ii
<i>Results</i>	ii
<i>Conclusions</i>	iii
Table of Contents	iv
Background.....	1
Project Objectives.....	4
Methods.....	4
<i>Interventions</i>	4
Education and Training Modules	4
Risk Assessment Tool and Resource Guide	4
Equipment Registry	5
<i>Data Collection and Study Timeline</i>	5
Pre Intervention	5
Intervention Year	6
Follow-Up	6
Results.....	8
Demographic Characteristics	8
Self Rating of Health Status	8
Employment Characteristics	8
<i>Objective 1</i>	8
Pre intervention Workplace Injuries	8
Intervention Year Workplace Injuries	9
Distribution of Injury Mechanisms	9
<i>Objective 2</i>	11
Intervention and Control Groups	11
<i>Objective 3</i>	13
Perceptions of Job safety, Pain or Discomfort, and Job Satisfaction	13
Baseline characteristics associated with injury	13
Discussion.....	14
Conclusions and Recommendations.....	17
Appendices.....	22
<i>Appendix A: Definitions</i>	22
<i>Appendix B: Baseline Questionnaire</i>	23

Background

The reorganization of the health care systems around the world has seen a trend in larger numbers of patients being cared for in their homes rather than a hospital setting (Denton 2003). In Canada, recent changes in health care delivery (focusing on day surgeries in acute care and changing admission criteria for nursing homes), resulted in more frail seniors and disabled persons living in the community (Health Canada 2002; Denton 2002). In general, health care restructuring has been implemented through the closure of hospital beds, nursing home beds and emphasis on replacement of services with homecare. As a result, there is increasing concern that both physical and psychosocial demands placed on home care workers have risen dramatically over the last few years (Brulin 2000; Meyer 1999; Denton 2003).

The people who use home support services in BC have acute, chronic, palliative or rehabilitative health care needs. These outpatients rely on CHWs to maintain independence and self-sufficiency in their own homes for as long as possible. Based on a pre-determined care plan, these workers provide personal assistance with daily activities, such as bathing, dressing, grooming, mobility, and meal preparation, as well as light household tasks that help to maintain a safe and supportive home (BC Ministry of Health Services 2004; Neysmith 1996; Owen 2003; Health Canada 2002). Home support services complement and supplement care from friends and family, and are offered throughout British Columbia.

Providing assistance with activities of daily living within a person's home presents special health and safety challenges for CHWs. Since the workplace of the CHW is primarily the clients' homes, imposing occupational health and safety measures to eliminate or reduce worker exposure to these hazards becomes more challenging.

Occupational hazards for CHWs include:

- The physical or environmental conditions - for example poor lighting, broken stairs, location of worksite, or small work spaces.
- Exposure to biological and chemical hazards.
- Exposure to environmental hazards.
- The potential for violence from clients and others.

As shown in Table 1, the WCB injury rate for Social Service and Domestic Workers, groups that include CHWs, are 7% to 30% higher than that for other healthcare workers, and 65% to 100% higher than the average for all other workers in BC (WCB 2000). The high incidence of injury is detrimental to the health of CHWs, costly to the healthcare system, and has a negative impact overall on the quality of home support services (Meyer 1999).

Table 1 WCB of BC Claim Rates for 2000

Industry Sub-sector	Injury Rate / 100 FTE
All industries in BC	4.8
Health Care Overall	7.4
Hospitals and related sites	6.7
Nursing Home Industries	8.9
Social Services and Related (includes CHWs)	9.6
Domestic Workers (includes CHWs)	7.9

Despite the high injury incidence, there have been few studies that provide information on effective risk management interventions and strategies among CHWs specifically. Heacock et al. (2004) noted that “there is an urgent need to research and solve problems associated with this profession”.

The effectiveness of education and training has been debated in the literature. A few studies have evaluated the effectiveness of education and training specifically among healthcare workers. Although one study found that an intensive (40 hour) patient handling skills training program was effective in reducing back injury (Videman, T. et al. 1989), other studies suggest that education alone, in the absence of work modifications, is not effective in reducing back injuries among healthcare workers (Feldstein 1993; Stubbs 1983). Education and training of healthcare workers has been shown to be an effective means of improving the likelihood of avoiding violent incidents (Carmel 1989). However, it was reported that many community-based staff have received no recent training in managing aggression, and others received training that was not appropriate for community work (Beale 1999).

Another strategy to reduce injury within the healthcare environment has been to use evidence-based, systematic risk assessment tools to identify risks of injury in the workplace, with the goal of making the worker’s environment safer. For example, initiatives using this approach at a U.S. medical center showed a successful downward trend in MSI rates for their nurses (Stetler 2003).

Finally, the use of mechanical lift equipment, specifically ceiling lift equipment, can significantly reduce the number of injuries that occur as a result of patient handling. For example, Ronald et al. showed that these devices reduced injuries to healthcare workers in extended care settings (Ronald 2002). In addition, mechanical lifting equipment has been shown to reduce injuries for homecare nurses during repositioning and transfer activities in clients’ homes (Knibbe 1999).

In the fall of 2000, OHSAH sponsored a workshop for union and management stakeholders to identify ways of reducing injuries among community health workers. Interventions proposed at the workshop were: education and training modules, the use of a risk assessment tool by a homecare

agency supervisor to help identify and mitigate the risks to staff prior to the visit, and access to mechanical lifting equipment. As a result of the workshop, a project steering committee of musculoskeletal injury prevention (MSIP) advisors, community health care professionals, other health and safety professionals, as well as representatives from OHSAH and the WCB, was established to develop the interventions.

Six agencies in BC participated in a stakeholder driven initiative to assess the current situation and evaluate the tools to improve the health and safety for CHWs.

Project Objectives

The objectives of this initiative were as follows:

1. Identify common mechanisms of reported workplace injuries, accepted WCB claims, and WCB time-loss claims in CHWs.
2. Compare the different intervention and control groups with regard to the number of reported workplace injuries, accepted WCB claims, and WCB time-loss claims¹, in order to ascertain the benefit of these measures.
3. Determine if baseline perceptions of workplace organizational factors, including safety and job satisfaction, were associated with differences in injury rates within the study participants.

Methods

Interventions

Education and Training Modules

An **education and training module** was designed to increase awareness of health and safety risks in the home support workplace. The module provided information on injury identification, as well as their causes and the control measures necessary to prevent them. Training manuals were developed with extensive input from the healthcare unions representing CHWs as well as the home support agencies. The manuals covered five topic areas, including musculoskeletal injury awareness, biohazardous waste and infection control, chemical hazard identification, general hazard identification, and violence prevention. CHW supervisors participated in train-the-trainer sessions, provided by OHSAH, to develop the skills required to educate their workers regarding risk factors and practical controls. The agency supervisors were then responsible for conducting the four hour training for their CHWs. OHSAH funded all expenses related to participation in this study (i.e. training materials, backfill pay, and data collection costs).

Risk Assessment Tool and Resource Guide

A comprehensive **Risk Assessment Tool** (RAT) was developed to guide home support supervisors through assessment of the risks to workers in a client's home and during client care activities. Used in conjunction with the Resource Guide, CHW Hazard Report Form, and Pain and Discomfort Worksheet, the checklist-based tool was divided into the same five topic areas as the education and training module.

1. A **Resource Guide** was developed for use with the RAT to provide a description of potential injury risks and corresponding control measures. The guide included additional information on proper body mechanics, alternatives to chemicals, hand washing techniques, and precautions to deal with hazards.
2. A **Hazard Report Form** was included with the RAT to allow CHWs to alert supervisors of potential or actual hazards in cases where conditions had changed within the home. This encouraged reassessment of a client's mobility or completion of another risk assessment.

¹ See Appendix A for Definitions

3. A **Pain and Discomfort Form** was included with the RAT to promote early reporting of signs and symptoms and prompt intervention at a point when prevention of discomfort may reduce the likelihood of a more serious injury.

Equipment Registry

The goal of the **equipment registry** was to provide clients (and CHWs) with convenient access to mechanical lift devices for transferring and repositioning activities, thereby reducing the potential for patient handling related injuries. The equipment registry component of the project envisioned having 20 lifts available to two intervention agencies. After more than one year of negotiations, two manufacturers agreed to provide a combined total of twenty-five lifts (twenty ceiling lifts and five free standing overhead lifts).

Data Collection and Study Timeline

Pre Intervention

The project steering committee met throughout 2001 to develop the interventions, recruit agencies, negotiate lift equipment from medical suppliers, and pilot the tools before use in the study.

A **questionnaire** (Appendix B)² was designed to collect information related to staff perception of their job, as well as demographic and employment information. Staff were asked to assess their job safety³, whether they experienced pain or discomfort during transfers⁴, and their feelings about their work organization and their job satisfaction⁵. For evaluation, a baseline questionnaire score was calculated for each participant by totaling the responses to these sections. With a range from a minimum of 16 to a maximum of 80, a high score represented a higher degree of job satisfaction and perception of safety for a participant. To determine what impact the interventions had on worker perceptions, the questionnaire was distributed to participants at baseline and 12-months after enrolment in the study.

Demographic information included gender, age, education, job title, union, work status (i.e. full-time, part-time, casual), and duration of employment. Study participants were also asked to rate their current health status (from 5 choices: excellent, very good, good, fair, poor) compared to their age contemporaries.

OHSAH staff collected reported workplace injuries from the participating agencies for the 3-year period prior to implementing an intervention. All reports were collected regardless of whether the injury resulted in an accepted WCB claim. Specific outcomes of interest included reported workplace injuries - with particular attention to mechanism of injury, accepted WCB claims, and WCB time-loss claims. The date of the injury and the mechanism of injury were recorded with a brief description of the events leading to the injury.

² A complete analysis of the baseline and follow-up questionnaires will be the subject of a separate report.

³ Appendix B, questions 13 – 18.

⁴ Appendix B, questions 20 and 21.

⁵ Appendix B, questions 32, 33, 35 – 40.

Intervention Year

From the fall of 2002 through early 2005, five home support agencies adopted one or more of the interventions while one agency participated as a control group (Table 2). Although twenty-five lifts were available to two of the intervention agencies during the study, only five lifts were used. Assessment of the lift equipment registry was an objective of this project; however, because so few of the lifts were used, this could not be accomplished. For analysis, data from Agency E, was combined with the data from the intervention agencies that participated in the education and training, the risk assessment tool, and the lift equipment registry (Agency A and B).

Table 2 Intervention Group by Agency

	Agency A (139)**	Agency B (96)	Agency C (51)	Agency D (154)	Agency E (37)	Agency F (171)
Education and Training	✓ Q*	✓ Q	✓ Q	✓ Q	✓ Q	
Risk Assessment Tool	✓	✓			✓	
Lift Equipment Registry	✓	✓				
Control						✓ Q

*Q = questionnaire. The above table shows that all 6 participating agencies completed the pre- and post- questionnaire

**Number of participants in each agency are listed within the parentheses

Four of the five intervention agencies conducted their education and training session between October 2002 and January 2003, and completed the baseline questionnaire at that time. Participants from the control site completed their questionnaire during a staff meeting that took place in September 2003. One of the intervention agencies joined the project in 2003, conducting training in December of that year and completing their follow up in 2005. Those agencies using the risk assessment tool intervention integrated it into their client intake process for a full year beginning once their education and training session was conducted. Table 3 shows detailed study timelines for each agency.

Follow-Up

Participants were monitored for workplace injuries for twelve months following completion of the baseline questionnaire. Once an agency completed one year using an intervention, their CHWs completed the follow-up questionnaire. In the case of the control agency, follow-up questionnaires were completed one year after collection of the baseline questionnaire.

Results

Six hundred and forty-eight community health workers completed the baseline questionnaire and were eligible for analysis within this study.

Demographic Characteristics

The majority of the participants were female (93%), and most had attended college or university (48%) or completed vocational training (37%). The age range was from 20 to 72 years young. The median age of participants when they completed the baseline questionnaire was 47 years.

Self Rating of Health Status

Ninety-six percent of participants perceived their health as being good or excellent when they compared their wellbeing to others of the same age. Three percent of the participants rated their health as fair and less than one percent as poor.

Employment Characteristics

Eighty-eight percent of participants were CHWs, while the remaining twelve percent classified their job title as “other”. Their average duration of employment was seven years. The range of service was from recently employed to twenty-nine years experience. With respect to work status, thirty-four percent of participants were full-time employees, twenty-six percent had part-time positions, and forty percent were casual employees. The majority of participants were members of the United Food and Commercial Workers (51%) and the British Columbia Government and Service Employees’ Union (41%), with the remainder from the B.C. Nurses’ Union and the Hospital Employees’ Union.

Objective 1

Identify common mechanisms of reported workplace injuries, accepted WCB claims, and WCB time-loss claims among CHWs in BC.

Pre intervention Workplace Injuries

During the three-year period before completion of the baseline questionnaire thirty-nine percent (253) of the 648 participants had reported at least one workplace injury. The mechanisms of injury included overexertion (53%), falls (31%), chemical, biological, and environmental exposure (10%), violence (6%), and allergic reactions (<1%). Twenty-four percent (158) of the participants had one or more previous accepted WCB claims and nineteen percent (125) had one or more previous WCB time-loss claims. The injury mechanisms for accepted WCB claims and for WCB time-loss claims were similar in distribution to the reported workplace injuries. For previous accepted WCB claims, the distribution was overexertion (59%), falls (29%), exposure (7%), violence (4%), and allergic reactions (1%). For previous WCB time-loss claims, the distribution was overexertion (60%), falls (30%), exposure (5%), violence (4%), and allergic reactions (1%).

Intervention Year Workplace Injuries

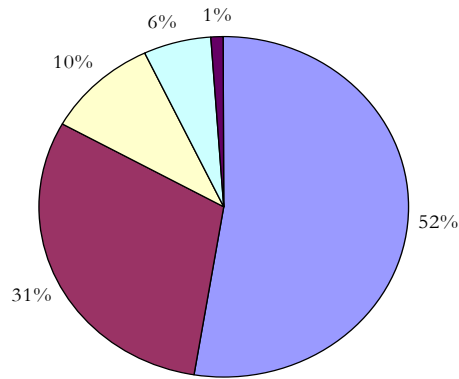
During the one-year follow-up period twenty-one percent (138) of the 648 participants reported one, and six percent (36) reported two or more, workplace injuries. In total, there were 180 reported injuries during the follow-up year, of which forty-seven percent (85) were associated with accepted WCB claims and thirty-eight percent with time-loss (69).

Distribution of Injury Mechanisms

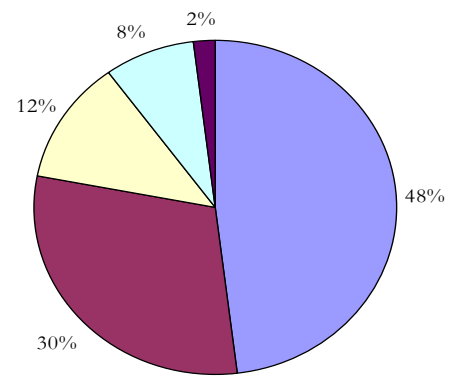
The distribution of injury mechanisms during the follow-up year was similar to the three-year pre-intervention period. See Figure 1 for a comparison between the injury mechanisms during the three-year pre-intervention period and the follow-up year. It is interesting to note that in the post intervention period, violence accounted for eleven percent (3) of all time loss injuries compared with four percent (4 in 3 years) prior to the pre intervention period. This change in proportion did not reach statistical significance given that the actual number of violence injuries was very small (An average of 1.3 per year in three years prior to the intervention compared with three cases occurring during the intervention year.

Figure 1 Distribution of injury mechanisms during the three-year pre-intervention period in comparison to the follow-up year

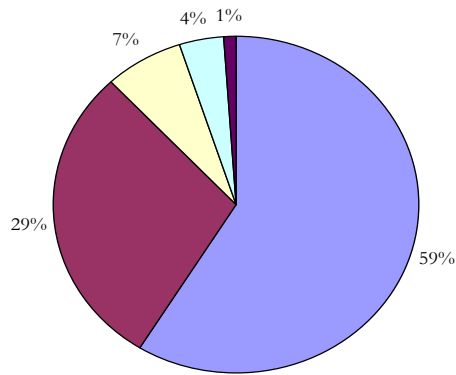
- Exertion
- Falls / Caught in / Struck by
- Exposure
- Violence
- Reactions



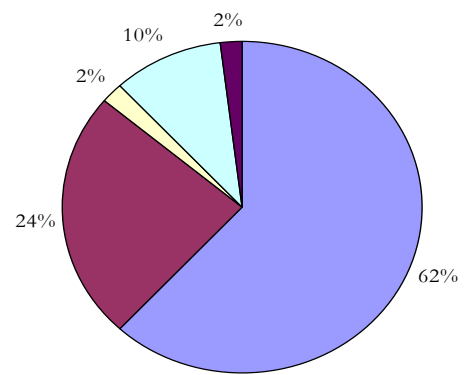
**Pre-intervention period
% Reported workplace injuries**



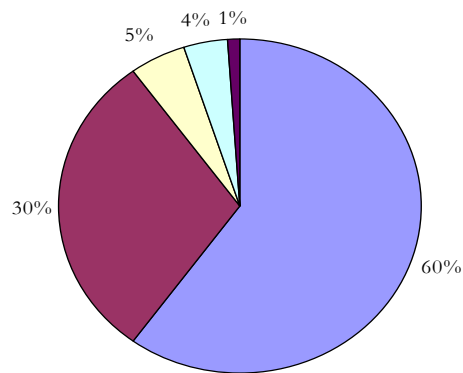
**Follow-up year
% Reported workplace injuries**



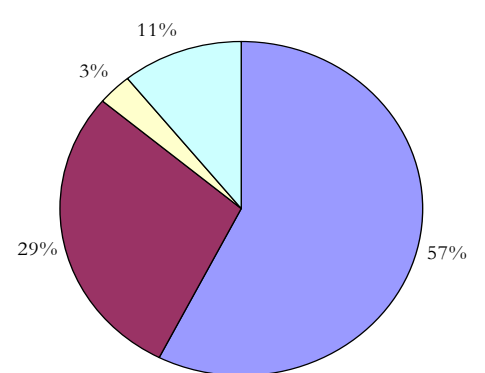
**Pre-intervention period
% Accepted WCB claims**



**Follow-up year
% Accepted WCB claims**



**Pre-intervention period
% WCB time-loss claims**



**Follow-up year
% WCB time-loss claims**

Objective 2

Compare the different intervention and control groups with regard to the number of reported workplace injuries, accepted WCB claims, and WCB time-loss claims, in order to ascertain the benefit of these measures.

Intervention and Control Groups

Table 4 provides information regarding the number of participants in the control group and each of the intervention groups. A total of seventy-four percent (477) participants were employed with agencies that adopted one or more of the intervention programs compared to twenty-six percent (171) in the control group.

Table 4 Distribution of the number of participants in the intervention groups and the control group

Interventions Applied	Number (%)
No Interventions	171 (26)
Education and Training Only	205 (32)
Education & RAT; and Education, RAT, & lift equipment	272 (42)
Total	648 (100)

Figure 2 shows the number of reported workplace injuries per 100 participants per intervention group. We found that employees in the intervention agencies were 1.5 to 2.0 times more likely to report a workplace injury than those in the control agency. The difference was statistically significant.

Conversely, as shown in Figure 3, participants in the intervention agencies sustained significantly fewer WCB time-loss claims than those in the control agency. There was no statistically significant difference found in accepted WCB claims between the participants in the intervention agencies and the control agency.

Figure 2 Number of reported workplace injuries per 100 participants per intervention group

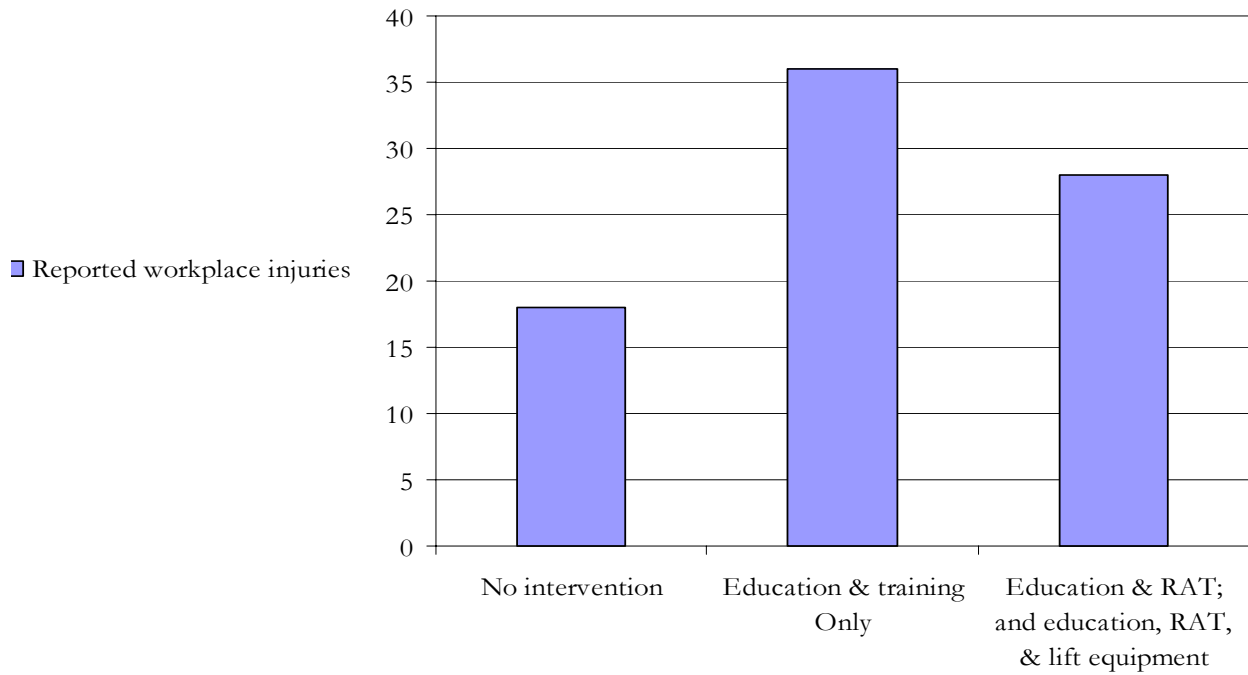
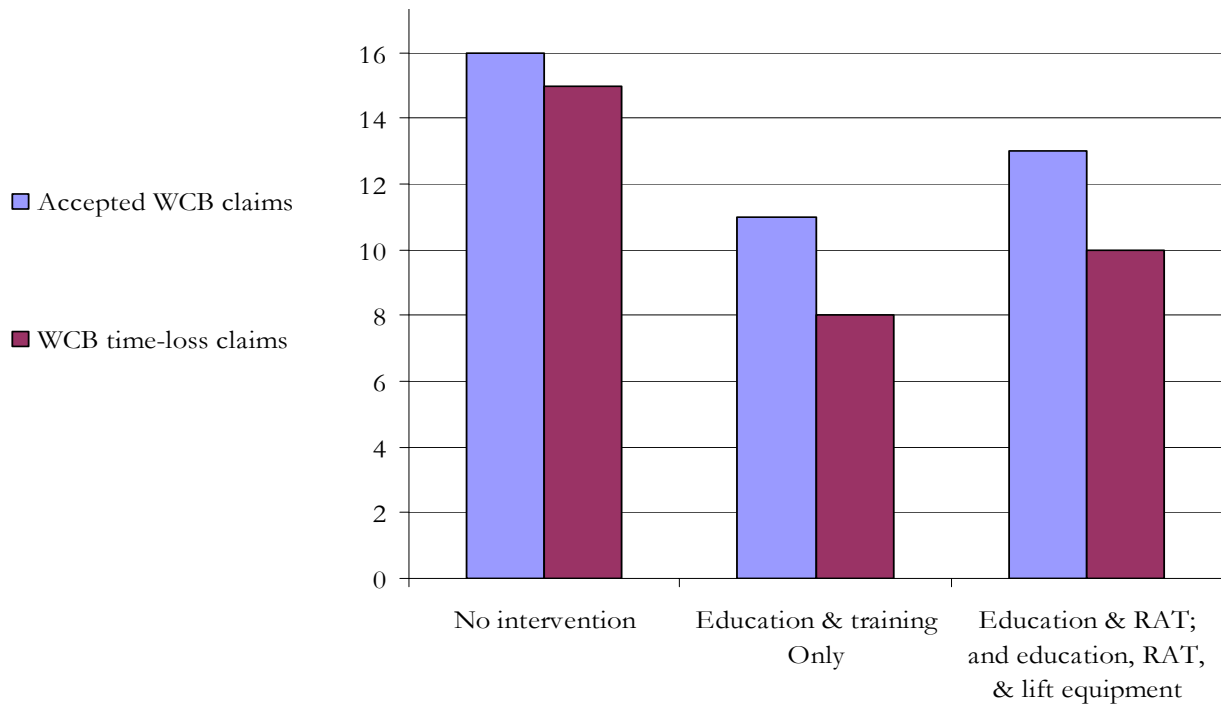


Figure 3 Number of accepted WCB claims and WCB time-loss claims per 100 participants per intervention group



Objective 3

Determine if baseline perceptions of workplace organizational factors, including safety and job satisfaction, was associated with differences in injury rates within the participating agencies.

Perceptions of Job safety, Pain or Discomfort, and Job Satisfaction

Table 5 provides a description of the total baseline questionnaire perception scores for the participants. We found that a lower score was associated with higher rates of accepted WCB claims and WCB time-loss claim rates.

Table 5 Total baseline questionnaire perception score

Description	Value
Total baseline questionnaire perception score	
Minimum	27
25 th percentile	52
Median	57
75 th percentile	62
Maximum	70

Baseline characteristics associated with injury

Other baseline characteristics found to be associated with higher accepted WCB and time-loss claim rates were employment status, presence of a previous reported workplace injury, older age, and absence of college (or university) education.

Discussion

According to the literature, the most common cause of injury among CHWs is overexertion due to patient handling, resulting in low back and shoulder-neck injuries (Johansson 1995; Knibbe 1996; WCB 2000; Meyer and Mutaner 1999; Torgen 1995; Denton 1999; Myers 1993; Ono 1995; Pohjonen 1998). Other direct causes of injury include falls, improper use of devices (e.g., needle stick), violence, and exposure to infectious diseases. Injury mechanisms in CHWs are generally similar to those reported in the literature for other healthcare professions (Yassi 1998; Yassi 2001). However, as noted by several authors, CHWs may be at increased risk compared with other health professionals as they are frequently required to complete tasks in clients' homes without appropriate equipment, sufficient space, or extra help (Zeytinoglu 2000; Pohjonen 1998; Dellve 2003; Ono 1995; Brulin 2000; Brulin 1998). Working in homes with small rooms, heavy furniture, or in poor physical condition (i.e., broken staircases, faulty electrical appliances, poor plumbing) have also been associated with increased risk of injury to CHWs while providing care (Canadian Health Report 1999; Najera 1997; Fazzone 2000; Perry 2001). Finally, not all clients are able to rearrange their home environment to suit home services or for the use of mechanical lift equipment (Hunter 1997; Perry 2001; Hempel 1993). Therefore, these devices are frequently not used despite the fact that some overexertion injuries, for example those associated with patient handling and repositioning, have been shown to be reduced when mechanical assist equipment is available (Engst 1995; Ronald 2002, Villeneuve 1998; Spiegel 2002).

Our findings were consistent with the literature (Meyer and Mutaner 1999; Denton 1999; Johansson 1995; Knibbe 1996; WCB 2000; Torgen 1995; Myers 1993; Ono 1995; Pohjonen 1998) in that overexertion and falls accounted for the majority of injuries recorded prior to the onset of interventions. It is important to note that this distribution was maintained during the intervention period, and irrespective of reported workplace injuries, accepted WCB claims, or WCB time-loss claims. This indicates that future interventions still need to focus specifically on overexertion injuries and falls. The fact that a larger proportion of injuries were attributed to violence also speaks to the importance of increased focus on this area.

Having recognized that the above factors are important to consider when designing effective intervention programs, we decided to examine the effect of three interventions - an education and training module, the use of a risk assessment tool (RAT) and resource guide, and access to lift equipment - in reducing injuries among CHWs. Unfortunately, however, because of difficulties in identifying manufacturers willing to loan lifts, and challenges addressing the concerns of all parties, there was a delay in the start-up of the equipment registry. In addition, only five of the twenty available mechanical lifts were used at the agencies participating in this portion of the intervention. Finally, the group that was assigned to receive education and training plus risk assessment tool (no lifts) had a very small sample size (37 employees). For these reasons, the second and third intervention groups were combined into a single group (Education and training, RAT, plus or minus lift equipment) during the analysis. Future work should involve addressing the barriers to using mechanical lift equipment in home settings and facilitating equipment use to ensure a larger study group.

Compared to those from the control site, participants from the intervention agencies reported more workplace injuries during the follow-up year. This result suggests that the interventions created an environment with greater awareness of what should be reported and how. The interventions may

have also increased workers' awareness of injury signs and symptoms, enabling them to identify injuries before they became severe enough to result in an accepted WCB claim or WCB time-loss claim. Recognition and reporting is clearly a key step in triggering implementation of control measures before injuries become serious or, to prevent injuries altogether.

More importantly, perhaps, compared to those from the control agency, participants from the intervention agencies experienced fewer injuries serious enough to result in accepted WCB claims and accepted time-loss claims. In this study we examined the overall effectiveness of education and training versus education and training, plus RAT, plus or minus mechanical lift. Both interventions appeared to be effective in reducing accepted WCB and time loss injury claims; however, methodological limitations did not allow for direct comparison of the two intervention groups with each other. Overall, we can conclude that education and training of employees and supervisors, and provision of a risk assessment tool to CHW supervisors, can enhance early recognition of the risks for an injury, and/or the early signs and symptoms of an injury. This in turn allows for the application of control measures in a more timely fashion and can help reduce the occurrence of long term time-loss injuries.

An important area for future inquiry is to learn which specific components of the education and training modules, and which specific components of the RAT, were effective in helping improve the safety of CHWs. Conversely, components which were less effective in meeting the desired objectives should be identified and improved in future applications. An obvious area for evaluation is the violence components of the education and training module in addition to the RAT.

As noted in the background, the use of a RAT has been shown by several investigators to be effective in reducing the rates of musculoskeletal injuries (Stetler 2003). However, the same approach has proven more challenging in the prevention of violence injuries in community workers. For example, Arshad and colleagues reported that although the best predictors of violence were known and considered, including the client's previous history of violent behaviour, substance abuse, age, and antisocial personality among others, they were unable to come up with any standardized method of recording factors necessary for effective risk assessment prior to the home visit (Arshad 2000). These authors advocated the use of specific education modules related to training of CHWs in dealing with aggressive behaviour, combined with frequent refresher courses, as being more effective in improving worker safety in their population (Arshad 2000).

Based on our own results and the recommendations in the literature, a sensible course of action may be to further enhance the violence component of the education and training module for CHWs and consider offering refresher courses. At the same time we can continue to work on improving the capacity of risk assessment tools in general to reduce the likelihood of violence injuries in this population.

When exploring the baseline factors related to injury in the study group, we found that those workers who had reported lower pain and discomfort levels, that had felt safer on the job, and that had reported higher job satisfaction on the baseline questionnaire were significantly less likely to sustain a workplace injury or WCB claim in the ensuing 12 months. This finding is exceedingly important as it demonstrates, in a prospective fashion, that enhanced CHW perception of health, safety, and job satisfaction, could have a protective effect in reducing injuries and claims. While education and training, as well as the use of a RAT, could go a long way to increasing CHWs feelings of being safe at work, and the use of equipment could lower perceived pain and discomfort,

further interventions designed specifically to improve job satisfaction would be worth contemplating.

Our results also showed that workers who attended college (or university) were less likely to experience and report a workplace injury. These results indicate that job specific education and training may have a positive effect on injury rates. Although we did not specifically look at the content of the education obtained at college or university (for example, work related as opposed to other), it appears that those with training (for example, nursing, or CHW certificate) may be more able to identify hazards and apply control measures.

Unfortunately, not all agencies could provide the data required due to limitations in their data systems. Changes during regionalisation and the formation of the Health Authorities in BC during 2002 made it difficult to locate files containing the data needed for analysis.

In addition, the safety programs, workplace culture, and reporting procedures differed between agencies and health authorities, which had an effect on the types of and details in the injury records available. New workplace interventions, such as a no-lift policy were implemented independently during the intervention phase of the project and also may have had an effect on the injury rate during the study period.

In conclusion, this study highlighted the fact that CHWs are at high risk of injuries; overexertion injuries and falls are still the main mechanism, but injuries do still occur from chemical and biological exposures, and violence injuries did not decrease. Those who reported feeling safe at work indeed had fewer injuries, which underlines the importance of mechanisms (including training, as well as organizational culture factors) that improve CHW confidence in safety. Despite some methodological limitations, the interventions in this study were found to significantly decrease the number of time-loss injuries and support on-going efforts to refine and implement such control measures.

Conclusions and Recommendations

The results of this study showed that the injury rates in CHW were higher than reported rates for other healthcare related occupations, and that the most common mechanisms for injury were overexertion and falls, followed by exposures, violence, and allergic reactions.

Results demonstrated, in a prospective fashion, that enhanced CHW perception of health, safety, and job satisfaction, could have a protective effect in reducing injuries and claims.

Other factors including presence of a previous reported workplace injury, full-time work status, lower baseline questionnaire score, older age, and absence of college or university education were all associated with more injuries to CHWs.

The following interventions examined in this study seemed to effectively reduce injuries in the participating CHWs.

- The provision of appropriate education and training to increase the awareness of the risk management process and promote the implementation of practical controls in a timely fashion; and
- The use of a risk assessment tool and resource guide to facilitate comprehensive evaluation of the work environment and guide the implementation of practical control measures before a CHW cares for a client in the home care environment.

Violence seems to be an increasingly important mechanism of injury and there is no evidence that any of the interventions offered reduced the rate of violence injuries in CHWs.

We recommend that:

- Education and training of CHWs and their supervisors continue to be implemented and appraised,
- The risk assessment tool and the way it is used be further evaluated for possible improvements,
- More attention be paid specifically to the area of violence in the future, both with respect to education and training as well as assessment of the merits of the risk assessment tool in this area,
- More investigation be undertaken as to why the mechanical lifting equipment was not well-received, including measures to address any barriers identified, and
- Discussion occurs with regards to other measures that may be taken to improve job satisfaction and perception of safety at work. These should in particular focus on workplace organizational factors and culture of safety.

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Appendices

Appendix A: Definitions

Reported workplace injury for the purpose of this analysis is any injury report, whether or not it resulted in a compensated claim.

Accepted WCB claim is any WCB compensated claim, including both time-loss and healthcare only claims.

WCB time-loss injury is any accepted WCB claim that resulted in compensation for time off due to injury.

Appendix B: Baseline Questionnaire

Study ID: _____



IMPROVING THE HEALTH OF COMMUNITY HEALTH WORKERS

Agency: _____

Date: _____

Thank you for your participation in this study. Your opinion is important to us. All individual responses will be kept CONFIDENTIAL and used for research purposes.

KNOWLEDGE OF HEALTH RISKS AND HOW TO REDUCE RISKS

Please circle a number to rate your **KNOWLEDGE** of each of the following topics

TOPIC	KNOWLEDGE				
	Inadequate				Completely adequate
Musculoskeletal Injury (causes and prevention)	1	2	3	4	5
Chemical Hazards (causes and prevention)	1	2	3	4	5
Biological Hazards (causes and prevention)	1	2	3	4	5
Violence (causes and prevention)	1	2	3	4	5
General Hazards (causes and prevention)	1	2	3	4	5
Policies and Procedures (of your agency)	1	2	3	4	5
Control measures for hazards	1	2	3	4	5

FEELING SAFE ON THE JOB

In the **last three months**, how safe have the following situations been for you, the worker?

	Very Unsafe				Very Safe
Lifting and transferring (including repositioning)	1	2	3	4	5
Completing household chores (including cleaning, laundry, shopping)	1	2	3	4	5
Chemical hazards (use of chemicals)	1	2	3	4	5
Biohazards (including needlestick injuries and infectious diseases)	1	2	3	4	5
Violence (involving clients, client's family, neighbours and pets)	1	2	3	4	5
General Hazards (including emergency procedures, appliances, firearms)	1	2	3	4	5
Other unsafe situations? (Please specify)	1	2	3	4	5

PAIN AND DISCOMFORT

	Never				Always
How often have you experienced pain and discomfort in the last month while lifting and transferring?	1	2	3	4	5

	None		Moderate		Severe
How much <i>pain and discomfort</i> have you experienced in the last month while lifting and transferring?	1	2	3	4	5

ASSISTIVE DEVICES

How often have you used the following devices in the **last month**? For how many clients?

Devices	# Times Used	# of clients
Transfer Belt		
Transfer Board		
Draw sheet		
Floor Lift		
Ceiling Lift		

Are the following assistive devices available when you need them for client handling?

	Never		Sometimes		Always	Not applicable
Transfer Belt	1	2	3	4	5	6
Transfer Board	1	2	3	4	5	6
Draw sheet	1	2	3	4	5	6
Floor Lift	1	2	3	4	5	6
Ceiling Lift	1	2	3	4	5	6

ORGANIZATION OF WORK

Indicate your opinion on the following statements:

	Strongly Disagree			Strongly Agree	
I am satisfied with my job.	1	2	3	4	5
I am confident in reporting risks to my supervisor.	1	2	3	4	5
In an emergency, I am confident I can follow the agency's procedures to deal with the problem.	1	2	3	4	5
I have enough time to get my work done.	1	2	3	4	5
I can choose not to perform a scheduled task if it is unsafe for me or the client	1	2	3	4	5
I am told when a client has a history of being aggressive or abusive.	1	2	3	4	5
There is a dependable check-in system in place.	1	2	3	4	5
It is clear who I should speak to if I am concerned about safety.	1	2	3	4	5
Prompt action is taken to improve unsafe working conditions when identified.	1	2	3	4	5

USE OF CEILING LIFTS

Indicate your opinion on the following statements:

	Strongly Disagree			Strongly Agree	
A majority of my clients would refuse to have a ceiling lift installed in their homes.	1	2	3	4	5
The extra time it takes to use a ceiling lift is a concern for me.	1	2	3	4	5
Community Health Workers need to learn more about the benefits of ceiling lifts, e.g., reduced injuries	1	2	3	4	5
I feel the bathroom is one of the safest places in the home for transferring clients.	1	2	3	4	5
Many of my clients feel less dignified when I have to help them get on/off the toilet, or in/out of the bathtub.	1	2	3	4	5
I think more clients would have overhead lifts in their homes if they were cheaper.	1	2	3	4	5

Additional comments:

WORKER INFORMATION

Date of Birth: ____/____/____
day month year

Sex: F M

Job title: Community Health Worker Other _____

Union: BCNU BCGEU HEU UFCW Other _____

Work Status: Full-time Part-time Casual Don't know Other _____

Duration of employment as Community Health Worker/Home Support Worker ____ yrs
 IF less than one year : ____ mos

Highest Level of Education:

- Completed Grade 10 Completed High School
 Completed or currently enrolled in vocational training
 Completed RCA/HSW IF YES Private College Provincial College
 Some college/university Completed university
 Other (specify) _____

How would you rate your health compared to others your age?

- Poor Fair Good Very Good Excellent

Thank you for your participation!